

46 HAS ~



UNITED NATIONS
ECONOMIC AND SOCIAL COUNCIL

Distr.
LIMITED
E/CN.14/CAP.7/3
8 November 1978
Original: ENGLISH

ECONOMIC COMMISSION FOR AFRICA
Conference of African Planners
Seventh session
Addis Ababa, 11-18 December 1978

THE SEARCH FOR A STRATEGY FOR THE THIRD UNITED NATIONS
DEVELOPMENT DECADE AND THE WORK BEING UNDERTAKEN IN THE
ECA SECRETARIAT IN THAT CONTEXT

CONTENTS

	<u>Page</u>
I. The Search for a Strategy for the Third United Nations Development Decade	1
II. The work completed or in progress in ECA	9
ANNEX I THE MODEL VARIABLES	
ANNEX II THE MODEL EQUATIONS	
ANNEX III SCHEMATIC DIAGRAM OF THE MODEL	

THE SEARCH FOR A STRATEGY FOR THE THIRD UNITED NATIONS
DEVELOPMENT DECADE AND THE WORK BEING UNDERTAKEN
— IN THE ECA SECRETARIAT IN THAT CONTEXT

Considerable discussions are now taking place within and outside the United Nations system on the shortcomings of the International Development Strategy for the Second United Nations Development Decade. ^{1/} A large number of decisions and resolutions have been adopted during the 1970s including in particular General Assembly resolutions 3201(S-VI) and 3202(S-VI) relating to the new international economic order.

The object of this paper is first to summarize in Part I the Strategy for the Second United Nations Development Decade as an introduction to its critique and then to summarize trends in thinking within and outside the United Nations system during the 1970s. Finally, a discussion will be made in Part II on the work completed or in progress in the ECA secretariat.

I. The search for a strategy for the Third United Nations Development Decade

In the preamble of the Strategy for the Second United Nations Development Decade it is stated that the success of the Strategy would depend largely on improvement in the general international economic situation and international co-operation on a scale commensurate with the magnitude of the problems faced by the developing countries. While the developing countries themselves bear the primary responsibility for their own development, however, the Strategy emphasizes that their efforts will not in themselves be enough to raise the level of economic activity and standards of welfare.

The Strategy sets a target for the developing countries of an average annual rate of growth in gross product of at least 6 per cent, or 3.5 per cent per capita, with the possibility of attaining a higher rate in the second half of the 1970s. The growth target implies an average annual expansion of 4 per cent in agricultural output and 8 per cent in manufacturing output, a half percentage point rise annually in the ratio of gross domestic saving to the gross product, a rise of somewhat less than 7 per cent in imports and somewhat higher than 7 per cent in exports at constant prices.

It is a consistent Strategy in the sense that over-all rates are consistent with sectoral ones, with the efforts set for domestic savings and targets for the inflow of foreign capital. The growth rates of both exports and imports in real terms are consistent with the fact that the import content of fixed capital formation is higher than GDP as a whole and with the idea of avoiding frustrated savings owing to the compartmentalized type of production in the developing countries. It is also consistent with the idea of expanded domestic savings, reduced balance-of-payments deficit as a percentage of GDP of developing countries and thus increased self-reliance at the national level defined in that limited sense. On the domestic front the need was also stressed to pursue sound fiscal and monetary policies and to eliminate institutional and administrative obstacles to the efficiency of public enterprises.

The concerted action required to increase the involvement of the developing countries in international trade and the benefit they secure from it are however obscure and not quantified. The Strategy calls merely for the conclusion of international agreements on a number of commodities, buffer-stock financing arrangements,

^{1/} General Assembly resolution 2626(XXV).

general guidelines for pricing policies for individual commodities and the elimination of tariff barriers on primary products, manufactures and semi-manufactures from developing countries. The developing countries are in turn invited to take advantage of such agreements by diversifying and expanding their exports to the developed countries and by organizing among themselves regional and subregional integration arrangements.

Concerning resource transfers, the Strategy invites each developed country to transfer annually in real terms the equivalent of 1 per cent of its GNP to the developing countries with a target for official development assistance fixed at 0.7 per cent. Yet the norms are partial with no provision for equitable distribution of assistance among developing countries either on bases of per capita income or mass poverty or performance. This is why aid varied substantially between one country and another mainly on the basis of political considerations with no co-ordination either for a single country or group of countries.

The Strategy also deals with other areas of external economic services, including invisibles. In view of the plight of the land-locked countries, it proposes that all States should become parties to the Convention of Transit Trade of Land-locked States of 8 July 1965. The two groups of least developed and land-locked countries should receive special assistance for improving their transport and communications infrastructure, science and technology and manpower resources so as to strengthen the diversification of their production and the formulation and implementation of their development plans.

The Strategy's goals and objectives also cover the desirability of fulfilling social objectives. It is considered essential to bring about social justice in society. The objectives include a more equitable distribution of income, increasing employment opportunities, expanding and improving facilities for education and health and improving nutrition standards and safeguarding the environment.

Lastly, the Strategy calls for the creation of a regular evaluation system in the form of a systematic appraisal of progress at the national and international levels. The intention is to follow closely the efforts being made to reach the objectives of the Strategy and to identify handicaps, with a view to recommending policies and measures for overcoming them.

It is clear from the above summary that the number of policy instruments specified, whether at domestic or international level, are far less than the number of objectives. Their effectiveness to achieve the objectives in full is therefore doubtful. Some of the objectives are too sweeping to quantify. Naturally, behind such weakness lie two important facts of life. The first is that the Strategy is dealing with sovereign States keen to maintain their full sovereignty over their policies. It also deals with Governments which cannot be fully committed to specific policy actions at both the domestic and the international level. It also deals with countries that are heterogeneous in their stages of development and factor endowment and sometimes contradictory in interests. Hence, the Strategy was formulated as aspirational in character lacking contractual commitments, with no provisions for contingencies and unforeseen circumstances, assuming continued dependence of developing countries and continued improvement in the general international economic situation with its pull effect on the growth in the developing countries and finally assuming such growth in developing countries to trickle down to the poor masses in these countries. The developing countries were taken as a group with few special measures to deal with the least developed or low-income groups. To give just one

example, the objective of increasing employment opportunities would require more accelerated growth, income distribution and policy instruments than was envisaged in the Strategy.

The regular evaluation system for the Strategy's implementation in the form of a systematic appraisal of progress at the national and international levels met with the problem of sovereignty and lack of commitments and thus failed to identify problems and handicaps whether at the national or the international level.

This vagueness of some of the objectives, insufficiency of policy instruments and political commitments can partly explain the large number of resolutions subsequently adopted within the United Nations fora. Another factor was the in depth analyses carried out within and outside the United Nations in connexion with the convening of sectoral, regional and international conferences. Such studies went far to reveal the shortcomings of the Strategy to cope with the problems confronting developing countries in specific sectors or specific aspects of development.

Among the conferences convened during the 1970s were the sixth and seventh special sessions of the General Assembly which adopted resolutions 3201(S-VI) and 3202(S-VI) containing the Declaration and Programme of Action on the Establishment of a New International Economic Order and resolution 3362(S-VII) on development and international economic co-operation; the twenty-ninth session of the General Assembly which adopted resolution 3281(XXIX) containing the Charter of Economic Rights and Duties of States; the UNIDO Conference which adopted the Lima Declaration and Plan of Action on Industrial Development and Co-operation; and the conference on the International Women's Year, human settlements, trade and development, employment, income distribution and social progress, education, water, desertification, economic co-operation among developing countries and so on, not to mention the many conferences held under the auspices of the regional commissions of the United Nations.

The large number of resolutions adopted at these conferences have not only set out new quantitative targets for the 1970s or upto the year 2000 but also suggested structural and institutional transformations together with the relevant international and national action programmes.

Among the major fields covered are integrated rural development with emphasis on nutrition and food; agrarian reform; effective mass participation; environmental management and control, full permanent sovereignty of States over the possession, use and disposal of their wealth and natural resources; balanced world economy in harmony with the needs and interests of all countries especially the developing ones; reform of the international monetary system; educational planning; improved credit and marketing systems; physical infrastructure; satisfaction of basic needs; and long-term industrial planning.

Among the new targets or objectives set are the reduction of the economic gap between developed and developing countries; elimination of hunger and malnutrition within a decade; expansion, liberalization and stabilization of trade in food products; reduction of post-harvest food losses by 50 per cent; stabilization of world markets of primary commodities and adequate earnings; diversification and expansion of manufactured exports from developing countries and increase in their share in world shipping and trade; increased trade with Socialist countries; liberalization of trade; improvement of terms of trade of developing countries; utilization of a substantial portion of resources released by effective disarmament measures for the economic and social development of developing countries; broadening developing countries' access to science and technology; promotion of development research adapted to developing countries' needs; sustained improvement in the well-being of the individual and maintaining human

dignity; protection and promotion of human rights and fundamental freedoms; greater equity and efficiency in resource allocation; reduction of disparities between rural and urban areas; adequate food, shelter, clothing and certain household equipment and furniture as well as essential community services including safe drinking water, sanitation, public transport, health, education and cultural facilities (i.e. commonly called the satisfaction of basic needs); democratization of education; rational population policies and promotion of research on population questions; elimination of illiteracy; health for all; preservation and enhancement of the environment; establishment of a world food security system and early warning system for food and agriculture; full employment of the labour force; and last but not least a 25 per cent share of world industrial output to be produced by developing countries by the year 2000, for which the regional targets were as follows: Africa 2 per cent, Latin America 13.5 per cent and Asia and the Pacific the remaining 10 per cent or so of the world output.

With these resolutions and bearing in mind the critique of the Strategy for the 1970s, the preparation of a Strategy for the Third United Nations Development Decade faces a number of questions and problems. The first is that of testing the consistency and feasibility of such targets individually or collectively taking into consideration past, present and future inter-industry, intersectoral relationships and the realistic assumptions of interdependence among regions and countries. In other words, it has to be established to what extent all these resolutions, targets and policies prescribed are consistent among themselves and feasible in the world of today. Another problem is the degree of contractual commitments in such resolutions bearing in mind that many of the development partners reserved their position on several important aspects of such resolutions.

Under such circumstances what the United Nations Secretariat can do is to develop a series of scenarios to assess the likely trends and to identify precisely the bottlenecks and the policy instruments needed.

A co-ordinating Task Force on Long-Term Development Objectives and Projections has been established within the United Nations system to avoid duplication and to ensure consistency to the extent possible in data used and assumptions made. More often than not difference in models, data used and assumptions could lead to enormous differences in results. Building such scenarios faces a great deal of technical and other problems in producing realistic assumptions acceptable to both developing and developed countries.

The experience of the international community during the first two development decades calls for many development issues to be considered in relation to each other. These include accelerated economic growth, rapid industrialization, self-reliance and self-sustained growth, rational balance in countries among sectors, export promotion and diversification, enhanced regional co-operation among developing countries, income distribution, employment, interaction between economic and social questions, choice of technology, etc. The quantitative tools for this task are either macro models for national economies, sectoral models, or world, regional or international models.

The building of a single multipurpose analytical framework to analyse all the above development issues was found costly and difficult. Besides organizations of the United Nations are mainly concerned with specialized fields and thus require model building emphasizing their own fields of competence.

The existing programme of work in the United Nations system is expected to generate a series of decision-oriented studies to assist the relevant bodies in the preparation of a new international development strategy for the Third United Nations Development Decade and beyond.

At Headquarters, the Centre for Development Planning, Projections and Policies has developed a global input-output model used for analysis of regional and sectoral relationships and for projections of the main macro-variables of different regions (e.g. developed market economies, centrally planned economies, developing Africa, etc.). This model is being extended and improved by disaggregating agricultural sector activities, by making prices endogenous, by improving the treatment of trade flows and alternative technologies, etc. It is also intended, in co-operation with regional commissions and FAO, to use this model for studies of global interdependence among regions, use of primary resources, global relocation of industries, etc.

The Centre is also involved in building an econometric model for each individual country. This project is being carried out jointly by the Centre, UNCTAD, ECA and other regional commissions. It is hoped in diversifying these countries studies that multiple approaches by various organizations would permit a more fruitful comparison between the different results of projections.

Specific joint studies are being undertaken by UNITAR, ILO, UNESCO and ECLA in order to explore development strategies by means of a new socio-economic model of world economy linking national and international income distribution. It is hoped that these studies will provide a coherent framework for the inclusion of economic, social and political factors and will result in a move from micro-economic analysis to macro-economic analysis. There will be co-operation with ECA and other regional commissions at some stages of the project.

Similarly, ECE, UNCTAD and UNIDO are working in a joint project in order to study the complex growth process based on technical progress, investment, economies of scale, trade and the international division of labour. This project will be carried out in close co-operation with ECLA and FAO.

Finally, the FAO project entitled "Agriculture towards 2000" is a normative study designed to generate inter alia: (i) national strategies and policies of individual countries by providing a long-term perspective of developments in the field of food and agriculture, which directly affect the prospects of their respective national economies; and (ii) international economic co-operation programmes, including sectors relating to the developing world, with particular reference to global and regional investment needs.

Based on the commodity data of individual countries, Project 2000 will be an accounting and economic framework which can be used to explore policy alternatives of agricultural adjustment at the international level and alternative scenarios of population and income growth. The project is being conducted in co-operation with the regional commissions including ECA.

So far the General Assembly has not adopted any resolution on the arrangements for the preparation of a Strategy for the Third United Nations Development Decade. However, resolution 3508(XXX) adopted on 15 December 1975 called for the examination of long-term trends in the economic development of world regions. This resolution was followed on 25 July 1977 by a similar one, Economic and Social Council resolution 2090(LXIII).

General Assembly resolution 3508(XXX) requested, inter alia, the regional commissions to prepare studies on long-term trends in and forecasts of the economic development of their respective regions taking into account the national development programmes of individual countries of the regions and the particular characteristics and priorities of the region. Such an examination is thought of great importance for securing a rapid rate of economic development of all countries including in particular developing countries and should also contribute to the elimination of the negative phenomena in the economies of those countries and regions.

In response to this resolution, the Secretary-General of the United Nations submitted to the sixty-third session of the Economic and Social Council a report dated 29 March 1977 on the "Long-term trends in the economic development of the regions of the world (E/5937). Annex III of this report was a "Preliminary assessment of long-term development trends and prospects in developing Africa" prepared by the secretariat of the Economic Commission for Africa.

The Economic and Social Council, in its resolution 2090(LXIII), noted with satisfaction the report of the Secretary-General and recommended that the regional commissions should continue and further expand their studies of long-term economic trends in their respective regions designed to reach practical conclusions regarding the expansion of economic co-operation both on a regional and on an international scale. The Council affirmed that regional commissions should bear in mind long-term prospects for the economic development of the regions of the world during the elaboration of the new international development strategy.

Furthermore, the resolution requested the Secretary-General, in consultation with the Committee for Development Planning, the Secretary-General of the United Nations Conference on Trade and Development and the heads of other interested bodies of the United Nations system, to start, on the basis of the regional studies under way, preparations for the elaboration of an over-all socio-economic perspective of the development of the world economy up to the year 2000, with special emphasis on the years up to 1990, taking due account of social and economic factors within development projections, interregional economic relationships and sectoral forecasts and including methodological guidelines appropriate for the further examination of long-term economic trends.

In response to General Assembly resolution 3508(XXX), the Committee for Development Planning at its twelfth session reiterated the view that the study of long-term trends in and forecast of the economic development of regions will provide a useful framework for both a retrospective analysis and a forward look intended to help in designing and implementing appropriate development policies. The Committee suggested that the review and appraisal exercise of 1977 should be made the beginning of careful and considered planning for a Third United Nations Development Decade and noted that the preparations for this purpose had already begun in the Secretariat. It hoped that the work at its thirteenth session would serve as its modest initial contributions in that direction.

For this purpose the Committee decided to convene three working groups to help to prepare the ground for deliberations at its thirteenth session. The Committee's deliberation will benefit greatly from advance work on a regional basis through on-the-spot discussions with officials of regional commissions and regional specialists on the staff of other interested organizations of the United Nations system. Late in 1976 one working group met at the headquarters of the Economic and Social Commission for Asia and the Pacific, at Bangkok, one at the headquarters of the Economic Commission for Latin America, at Santiago, and one at the headquarters of the Economic Commission for Africa at Addis Ababa.

At its thirteenth session held in April 1977 the Committee for Development Planning examined the third over-all review and appraisal of progress in the implementation of the Strategy for the Second United Nations Development Decade including the one prepared by the ECA secretariat.^{2/} It also examined the long-term trends and forecasts in the economic development of the various regions of the world (including document E/5937/Add/3 prepared by the ECA secretariat) and their mutual relationship including methodological guidelines for the further examination of such trends in the regions.

At this session the Committee decided to include in the agenda for its fourteenth session (convened in March 1978) an item relating to development issues for the 1980s and the evaluation of long-term studies and projections and their policy implications for development.

According to the Committee for Development Planning^{3/} fundamental rethinking has been prompted as to the nature and adequacy of the economic relationships between countries. The Strategy for the 1970s was based on the assumption that steady economic growth would continue in developed countries and that, with some improvement in aid, trade and transfer of technology would have a positive effect in developing countries. However, trends in the developed market economies during the 1970s with the recession, inflation and unemployment were in marked contrast with the 1960s.

Resolutions 3202(S-VI) and 3281 (XXIX) respectively on the establishment of a new international economic order and the Charter of Economic Rights and Duties of States stressed that what is needed is not just a refurbishing of the old economic order but a new set of relationships based on mutual interest and respect among nations with greater equity not only for narrowing gaps in levels of living but also for a fairer sharing of power and decision making. They also underlined the importance of co-operation among developing countries and self-reliance and self-sustained growth both at the national, regional and international levels.

The diversity in performance of developing countries makes it difficult if not impossible to speak of developing countries as a homogeneous group of countries with similar problems. Although some attempt was made during the 1960s and 1970s to identify a category of countries defined as least developed with special measures in their favour, and also another group, temporarily called most seriously affected countries, yet it is the group of poorer countries that continue to offer the greatest challenge to the world at large. A new group of developing nations with middle and high per capita incomes have achieved moderate to high growth rates and standard of living and are likely to do so in the future, although this group of countries continues to face economic and social problems including the reduction of income inequalities, elimination of mass poverty, high rate of unemployment and inflation.

According to the Committee the growing difficulties facing the developed world are threatening the gains, modest as they are, achieved during the past few years in international economic relationships. There is continued resistance to commodity arrangements and to lifting restrictions against import manufactures and semi-manufacture from developing countries. Resources transfers on concessional terms failed to reach modest targets, and question of a link between development finance and the creation of international liquidity has been shelved.

^{2/} ECA, Survey of Economic and Social Conditions in Africa, 1976, parts I and II.

^{3/} Committee for Development Planning, Report of the Fourteenth Session (6-16 March 1978).

Reference was made to the emergence of a certain international ambivalence about the kind of international relationship in particular between developed and developing countries. In the developed market economies certain schools of thinking are arguing less about growth of physical output and more about growth of services designed to improve the quality of life and to conserve the environment and the scarce non-renewable resources. The Committee rightly observed that "given the growing interdependence of the global economy, given the continuing need in nearly all developing nations for rapid economic growth, and given the need to tackle the insistent problems of poverty and economic dependence in the poorest countries, it is clear that we require more rather than less growth of the world economy, although there are clear needs for changes in its structure". 4/

The Committee made a number of preliminary suggestions for a strategy for the 1980s although it cautioned that it is only one voice, and not a very leading one, among those that will be joining the debate over a world strategy for the 1980s, and the most important participants will, in the end, be Governments themselves.

The Strategy for the Third Decade needs to be characterized by a perspective, broader in several aspects than those of the previous two strategies and which should be framed in line with the objectives of a new international economic order. It should focus on the 1980s but with long-term development objectives up to the year 2000. It should further be global, covering both domestic as well as international development aspects connected with changes and policy within both developed and developing countries. It should also give full recognition to the differences in structure and development levels of various groups of countries and suggest development needs group by group. Furthermore, it should strengthen co-operation among developing countries and should emphasize both national and international institutional reform perhaps as much as, if not more, than quantitative targets. The Committee stressed the need for effective and equitable management of the global economy in order to satisfy the conditions of (a) sustained and reasonably steady economic growth accelerating in poor countries and sufficient to meet economic and social objectives in the middle- and higher-income groups of countries; (b) stability; (c) efficiency; (d) equity; and finally (e) the need to account for diversity among developing countries. Here the object should be to mount an autonomous development strategy which is an important aspect of self-reliance often inhibited by the multitude of economic and political linkages restricting countries from using fully their resources.

Regarding the long-term goals extending to the year 2000 which should be set as reference to the 1980s strategy, the Committee recommended that its objectives should be to diminish if not eradicate the several extreme imbalances which characterize the world today such as the large inequalities in per capita income levels among countries, lack of a rational balance within and among countries in certain key sectors such as energy, food and industrial production.

A sensible strategy for the 1980s in the view of the Committee for Development Planning must be disaggregated by country groups according to the manner in which the countries are integrated into the world economy. For example, among developing countries, one can distinguish (a) oil-exporting countries, (b) countries depending heavily on exports of other primary products, (c) rapidly industrializing countries and (d) low-income developing countries. These groupings may or may not overlap but nevertheless they permit tentative approaches to a differentiated strategy.

4/ Ibid., p. 7.

The oil-exporting countries, because they still have underdeveloped aspects, need inputs of technology and expertise from the advanced economies and from other developing economies with such resources.

Developing countries depending heavily on exports of other primary products need commodity agreements or other related measures to stabilize their economy. There will also be a possibility of a transfer of resources through improving the terms of trade in favour of exporting countries.

The rapidly industrializing developing countries with high rates of economic growth and export expansion need the following conditions to further their economic progress: (i) continuation of a liberal world trade system; (ii) access to the markets, of both developed and developing countries; and (iii) access to world capital markets on commercial or better-than-commercial terms.

The low-income countries need the assistance of the international community to help to ensure their accelerated progress. International aid should aim not only at the mere elimination of mass poverty but also at making these countries self-sustaining by helping to finance major improvements in economic infrastructure which are a precondition for rapid agricultural and industrial expansion in such countries. Although poverty is not confined only to low-income countries, international efforts should be largely concentrated on satisfaction of basic needs since the developing countries with higher per capita incomes should be able to go further towards meeting such needs from domestic resources. Official development assistance (ODA) to the poorer countries should be offered on grant or near-grant terms, and there is a strong case of conveying fresh concessional transfers to them in the form of the cancellation of debt service coming due in respect of official development assistance or of cancellation of past ODA debt itself.

II. The work completed or in progress in ECA

The starting point for the preparations of an international Strategy for the Third United Nations Development Decade was the preparation in 1975 of an African Strategy. The Executive Committee of the Economic Commission for Africa at an extraordinary meeting held at Addis Ababa from 16 to 18 February 1976 adopted a regional strategy for the next decade and beyond. This Strategy is embodied in the revised framework of principles for the implementation of the new international economic order in Africa. 5/ According to the Strategy, the main theme of the new international economic order is the restructuring of international economic relations in such a way as to make it feasible for countries of the Third World to initiate or accelerate internally located and relatively autonomous processes of growth, diversification and integration. The Strategy rightly observed that neither the policy of increasing production of one or two major agricultural products for export, nor that of diversifying the range of such agricultural exports, nor import substitution industrialization, had laid the foundations for viable self-sustaining socio-economic systems or removed substantially the geographical and commodity constraints on Africa's external trade.

5/ Revised framework of principles for the implementation of the new international economic order in Africa, 1976-1981-1986, E/CN.14/ECO/90/Rev.3.

According to the African Strategy for the 1980s and beyond, economic and social development should rest on the three basic objectives: (a) the deliberate promotion of an increasing measure of self-reliance; (b) the acceleration of internally located and relatively autonomous processes of growth and diversification; and (c) the progressive eradication of unemployment and mass poverty.

The principal elements in the strategy to achieve these objectives include first the promotion of agricultural production, rural transformation and basic industrialization; second, the enlargement of markets through close economic co-operation or integration among States; and, third, the restructuring of trade between Africa and the outside world.

In addition to their capability for mutual reinforcement basic industrialization activities exert strong growth-promoting effects on other industries and sectors, in particular on agriculture and on rural transformation, which then react positively on each other and on the industrial sector. Thus, agriculture is subject to demand pressures from industry and public works in the rural sector; industry is subject to demand pressures from agriculture and public works in the rural sector and public works in the rural sector is subject to demand pressures from both agriculture and industry.

It is necessary to design deliberate policy instruments, programmes and plans to promote the development of these sectors. In view of the small size of most African countries and the dominance of subsistence output in many of them, multinational co-operation in the production and distribution of many inputs critical for initiating or accelerating processes of socio-economic change is singled out as a major area where concrete and concerted action is needed.

Inadequate supply of competent entrepreneurs and skilled manpower in both the public and the private sectors, limited range of choice of technology, lack of information on production process and product markets, limited knowledge of inter-industry integration, large imports of inputs, small output mix, and limited domestic markets relative to efficient plant sizes are also mentioned as factors which restrict the absorptive capacities of African countries to respond at the micro level to initiatives at the national and regional levels.

Relations with the developed market economies and the Socialist countries and wider access to their markets are important, as are policies destined to contain the external drain of resources from developing countries, securing technical assistance in real and more relevant terms and gaining access to technology on less restrictive terms. But under the strategy as conceived, it is the vision and competence of Governments and communities in selecting particular technologies, types of skill, capital goods and services and combining them with local resources that will determine the results achieved.

In response to the specific request and recommendations contained in General Assembly resolution 3508(XXX) and the subsequent Economic and Social Council resolutions referred to above, the Economic Commission for Africa has undertaken a

preliminary specification of a standard projection model for African countries under alternative sets of development scenarios. 6/ This work programme, in conjunction with ongoing work in the United Nations system referred above, is expected to generate a series of policy-oriented studies to assist the relevant bodies in the preparation of the Third United Nations Development Decade by providing them with more or less detailed country studies and models.

Prior to the specification of a projection model, ECA, as stated before, has prepared a preliminary assessment of development trends in the ECA region during the period 1960-1975 and long-term prospects and forecasts based on past trends and policies drawn in the light of individual African countries' problems and plans. 7/ This assessment is based on three earlier biennial studies undertaken by the secretariat which review and appraise the over-all socio-economic performance of the African economies. 8/ It should be noted that the long-term studies and projections thus far carried out in the ECA secretariat have been based on the assumption of no change in parameters and policies and on an iterative process or a series of successive approximations to reach an optimal level of development.

The standard projection model has been built in response to the increasing demand for quantitative analysis and projection work in the ECA region. It covers macro-projections of the main aspects of the African economy on an individual country and regional basis, especially with regard to such macro-variables as sectoral output, investment and employment, public and private consumption and imports and exports by the major commodity group. At a later stage and as data becomes available, an attempt will be made to introduce micro-variables and forward studies of specific activities built around feasible projects.

This projection exercise aims at (i) analysing the structure of individual country economies so as to facilitate the implementation of the national and international development strategies by making available to planners the country-specific implications of a variety of structural and policy parameters, both national and external; and (ii) eventually assisting ECA member Governments in project preparation at the micro-level.

6/ In addition to General Assembly resolution 3508(XXX) mention should also be made of Commission resolutions 105(VI) and 187(IX) and Conference of Ministers resolutions 257(XII) and 260(XII) which institutionalized and strengthened the activities of ECA in the field of socio-economic planning and projections (See E/594/Add.1 and E/CN.14/683/Add. 1, p. 15). The standard projection model is given in preliminary Annex I and II to this paper.

7/ See annex III of the report of the Secretary-General on long-term trends in the economic development of the regions of the world, "Preliminary Assessment of long-term trends and prospects in developing Africa" (E/5937/Add.3).

8/ See ECA, Survey of Economic and Social Conditions in Africa, documents E/CN.14/600, E/CN.14/632/Part I and E/CN.14/654/Part I. See also the Revised framework of principles for the implementation of the new international economic order in Africa, 1976-1981-1986, (E/CN.14/ECO/90/Rev. 3).

The need for accelerating socio-economic development in Africa through systematic planning of the various macro- and micro-mechanics of the African economies has been recognized for some time now by all the countries in the African region. To this end, individual countries have formulated development plans incorporating various policy variables and instruments. However, in many cases, development plans have tended to cover relatively short periods ranging from only three to seven years. Such a duration might, undoubtedly, be desirable in terms of utility and operational expediency. It imposes, however, certain crucial limitations on the degree of change or transformation that can be envisaged, aimed at and planned for since, especially in the African economies, a deliberate transformation of historical and structural socio-economic patterns can be carried out without disruption only over relatively long periods. It thus seems desirable that the African countries should have some long-term perspective of their economies to provide a general although perhaps skeletal working framework. The shorter-term plans could then be coherently conceived over time as dynamically linked subprogrammes of the long-term alternatives.

In any case, a long-term perspective incorporating an analysis of past and the future trends in a given developing economy will to some extent suggest or highlight not only the long-term alternative patterns of growth but also the implications of different short- and medium-term policy instrument vectors.

The origins of all systems of planning models in general and econometric model building in particular stem from the necessity to give some plausible theoretical explanation of the economic behaviour of an economic unit or a group of units including the explanation of the stochastic nature of the variables which constitute the economic unit. Looked upon in this manner the theoretical problem in formulating a reliable econometric model includes, inter alia, the conceptualization of a suitable set of variable relationships which specify, represent and formalize the economic behaviour of the relevant economic unit.

Broadly speaking, planning models can be fairly simply classified into three types according to their theoretical affiliations: (i) supply models, based on production functions and adopted for the purpose of simulating long-term growth; (ii) Keynesian models in which demand takes the key role and which are mainly used for simulating short-term economic fluctuations; and (iii) models combining growth of supply factors (through production functions) and the pressure of demand. Intuitively it might be thought that owing to supply constraints a useful African model should be based on the last type although much more research still has to be carried out in this direction.

Naturally for any model to be useful, it might be based not only on theoretically tenable formulations but also on empirically justifiable and relevant considerations with enough meaningful insight into the actual nature and problems of the particular economy that the model is supposed to simulate. In this regard, there is no doubt that there is an inevitable necessity for close co-operation between the various planning agencies in the African countries and the model builders so as to ensure that as much of the reality of the individual economies is rightly portrayed and analysed. In addition, there is also an urgent need to strengthen, through concerted research efforts in Africa, the empirical nature and particular problems of the African economies in order to permit a refinement of the various systems of planning models in Africa.

Development in general and African development in particular has, at the present time, reached an important stage which involves tackling not only economic issues but also social and political factors. Development is now rightly conceived as encompassing such critical issues as income distribution and employment (with the underlying basic needs theme), self- and collective reliance (under regional co-operation) industrialization with a self-generating and self-sustaining capacity, technology, capital

requirements, restructuring of the national and international economic order, etc. Thus planning for the present day development process necessitates, among others, a deep and pragmatic assessment of the various objectives and their priority listing, an analysis of the various social, political and economic problems along with their orders of magnitude and, consequently, the generation of consistent and realistic policy instruments. This is undoubtedly a gigantic task which no single available analytical tool can realistically handle. In actual fact it is not yet clear, especially in the African situation, how some of the development factors (e.g. satisfaction of basic needs or eradication of mass poverty and some socio-political elements) can be quantitatively introduced into a model structure.

In addition, the high sensitivity of the African economies to external forces like nature's climatic changes and fluctuations in growth in the developed countries results in considerable economic uncertainties which limit the empirical-theoretical balance that can be achieved by African economic models. It is thus important that all these various constraints and limits to the African socio-economic structure are taken into consideration when formulating African projection models.

The building of useful projection models to test the implications of certain structural and policy parameters over a period of time inevitably necessitates the existence of an efficient reliable data base. The lack of statistics and a basic economic data base represents one of the most serious problems which developing countries everywhere face in carrying out effective economic planning and projection work. One of the achievements of modern science has been that of introducing electronic computers to improve the quality, timing and efficiency of information systems.

In Africa in particular the lack of an efficient data base in many countries limits the efforts of researchers and planners in formulating more realistic development plans. For the determination of possible development targets requires a thorough examination of the way in which the country has evolved in the past and of the dynamic factors which have played an important part in its growth. Once the economy's past structural and policy parameters have been determined through multi-regression or other techniques, it becomes possible to assess the economy's growth potentialities and to define the degree of effort required to achieve various alternative patterns of growth by either assuming a continuation of the economy's past trends or modifying the past parameters in order to attain higher growth rates. Such methodology has not yet been widely used in many development plans in Africa because of constraints relating to disaggregated data and sophisticated computers.

The ECA secretariat has not been immune to these problems. It had also met with many difficulties in implementing model building and econometric techniques for its projection work because of manpower and financial constraints and the paucity of reliable long series of disaggregated data. The instability of parameters and excessive reliance on external factors such as international trade and the flow of external resources are another set of problems faced by ECA in carrying out its projection work.

As already noted, from a theoretical point of view, model building stems from the need to give an explanation of the economic unit or a group of economic units, including an explanation of the stochastic nature of this behaviour. Therefore, model building was for a long time mainly and almost exclusively the preserve of academicians.

Progressively, Governments and planning agencies, mainly in developed countries, have tried to use models as tools for decision making at the micro- or macro-economic levels. In developing countries in general and in Africa in particular, the use of models as analysis tools in the decision-making process is still constrained by various factors.

Besides the data and resource constraints already discussed, it is clear that political and sociological constraints obviously tend to weaken the relevance of the model and consequently its effectiveness at the implementation stage.

However, taking into account all these considerations and keeping in mind that a quantitative model is not an aim in itself, it should be emphasized that models might be used as analysis and guidance tools at both the national and the regional levels.

First of all, the use of an adequate model may facilitate the analysis of a national economy and particularly the intersectoral relationships. Similarly, the aggregation of a given set of national economies might make it possible to analyse the effectiveness of regional co-operation and the degree of interdependence of these economies.

Secondly, models can be used for short-, medium- or long-term extrapolations in order to show what might happen if there was no change in the current structure and policy of the "system" under study (enterprise, national, regional or world economy). Consequently models can help in generating structural changes, either internal or external. In other words, models can generate scenarios on which development planning might be based depending on the economic, social and political objectives. It should be noted that use of a quantitative tool necessitates a clear definition of these objectives which is often one of the weaknesses of some development plans.

Finally, the backward effects of model building are used to assess the reliability of data and hence to improve the efficiency of the information system on which all decisions are based.

However, it should be noted that the efficient utilization of quantitative tools cannot be achieved without a constant dialogue between the decision makers and planning officials on the one hand and the model builders on the other hand. Only through such dialogue could the model be made more relevant and improved by including more detailed quantitative or qualitative variables.

Various kinds of scenarios (i.e., sets of assumptions determining the future development of an economy) will hopefully be analysed by the ECA secretariat in order to suggest alternative development issues for the countries of ECA region for the Third United Nations Development Decade.

These assumptions may refer to: (i) exogenous variables (e.g. growth rate of inflow of foreign capital, prices of primary commodities, population growth, world demand for various primary commodities, world demand for manufactured goods from developing countries, etc.); (ii) quantitative or qualitative development objectives and targets (e.g. national targets for productive sectors or gross domestic output, export and import sectors, self-sufficiency in food, self-sustained growth, full employment and basic needs; (iii) international targets such as stabilization of terms of trade, commodity agreements, Lima targets; Second Development Decade targets, etc.); and (iv) policy means and instruments (e.g. changes in global and sectoral incremental capital output ratios, changes in investment shares, changes in domestic consumption or saving, alleviating poverty by income distribution, etc.).

These scenarios will be analysed at the country level and also at the regional level by making different possible sets of country groupings. The analysis at the regional level represents an attempt to assess the undoubtable advantages of regional self-reliance.

In building the scenarios, it is not intended to assess ambitious objectives and targets since a development policy must be coherent and realistic. Actually the simulation process is intended to help to assess the coherence and to take into account the reality of the African economies in the world economic framework.

Thus, in most of the scenarios, the endogenous variables corresponding to the most important objectives are computed non-stochastically and treated as exogenous while the remaining endogenous variables are derived according to the estimated equations. However, the endogenous variables whose historical values are near to either the possible minimum or the maximum might, in some cases, be treated as exogenous (e.g. current account balance, net factor income to abroad, etc.). The exogenous variables (population, prices of primary commodities, etc.) are either projected by other sources (UNCTAD, World Bank, United Nations Headquarters and so forth) or extrapolated on the base of the past figures (index of exchange rate, net transfers from abroad, inflows of loans, debts and foreign investments).

The scenario for the continuation of historical and structural trends assumes no change in the structure of the model (i.e. national and international policies). Both supply and demand equations are taken as they are estimated. Part of the exogenous variables will be introduced from projected series (commodity prices, world exports, index of world prices and population) while others will be extrapolated (index of exchange rates and inflow of financial resources).

Two variants of this scenario will be considered. In the first one, external capital (as shown by comparison between reserves and current account deficit) will be derived directly from the endogenous growth rates projected. In the second variant, the current account deficit, if any, will take into account the possibility of a given country in terms of inflow of grants, loans and aid. Thus, the historical and structural trends are, in this variant, constrained by capital availability. It should be emphasized that the main objective of this scenario is to identify the areas (internal or external) in which changes are called for. Various scenarios of structural changes in African economies, relating respectively to investment, consumption (saving) and external trade policies, will be considered.

The scenarios related to investment policy will be based on either the incremental capital-output ratios or the shares of investments in specific sectors, especially agriculture and manufactures or both.

It seems that the incremental capital-output ratios and investment shares are important investment policies reflecting either choice of investment projects, choice of technologies or priority given to specific sectors in the development strategy (e.g. emphasis on infrastructure, heavy or light industries, etc.) and efficiency in the production structure.

With regard to the consumption (saving) policy, two scenarios using respectively total consumption and private or government consumption will be tested to assess to what extent changes in propensity to consume (to save) affect growth prospects.

Given a certain growth rate of consumption and a certain change (increase or decrease in the marginal propensity to consume or save), the corresponding national income is obtained and hence domestic income, investments, imports, gross domestic products and other macro-economic variables. These scenarios might also help to assess the level at which one of the two gaps (saving and trade) is dominant.

In addition, two scenarios dealing respectively with imports and exports will be used to analyse desirable and possible structural changes in the external trade policy of a given country.

As in the consumption scenarios, growth rates of imports and propensity to import are assumed and domestic income computed. The remaining macro-economic variables are derived using the estimated model.

In the second scenario, it is intended to analyse the impact of an increase in exports of manufactured goods on domestic income through value added in the manufacturing sector. This increase will be obtained by assuming a higher growth rate in exports of manufactured goods than in total exports.

As in the consumption scenarios, each of the external trade scenarios can be used to analyse changes in saving and trade gaps.

On the basis of the possible alternative development targets suggested by various United Nations conferences, a set of four long-term development scenarios dealing with the national action and two others dealing with the international action has been tentatively retained for the ECA region as well as the set of scenarios on self-reliance.

As specified in the International Development Strategy for the Second Development Decade this scenario postulates an over-all economic growth rate of at least 6 per cent yearly to be achieved by developing African countries in the next decade. This scenario starts by assuming that the balance-of-payment values of net factor income to abroad, net private transfers from abroad, the index of exchange rate (1976=100) and the weighted average spot price index of commodities imported or exported by the country under study are determined exogenously. Then the annual growth rate of GDP at market price is set at the target rate of a minimum of 6 per cent. The value added of gross domestic product at factor cost and that of the subsequent endogenous variables will then be derived by simulation.

In all cases, the target growth rate of GDP should imply a growth rate in per capita income of not less than 3.5 per cent annually. Of specific interest in this scenario will be the derived growth rates of agriculture and manufacturing and their compatibility with the targets of the Second Development Decade.

In order to reach the target of 6 per cent annual growth rate in GDP in Africa and since in many countries agriculture constitutes an important part of GDP, an average annual growth rate of 4 per cent in agricultural output was assumed to be reached and maintained by all the African countries in 1980s. Given the exogenous variables stated above, the annual growth rate of 4 per cent in agricultural output will generate, through simulation and the income-elasticity approach, the value added in GDP or income and consequently that of the subsequent variables of the model.

It should be mentioned, however, that during the period 1970-1977 and despite the potentials in land, labour and water resources, the food production in many African countries had to face many difficulties including severe droughts and other climatic factors which partly explain the substantial lag in the annual 1.3 per cent growth rate behind the target of 4 per cent. ^{2/} In the simulation of this scenario, it is implicitly assumed that uncertainty resulting from the adverse effect of the weather and climatic factors can improve so that the 4 per cent growth rate target can be sustained during the 1980s. This scenario will be expanded through the disaggregation of agricultural output (food and non-food) in order to assess the need to increase food production in all African countries so as to reduce dependency on food imports.

The model assumes as a third scenario the Industrial Development Strategy, which recommends that industrial growth in developing African countries should be at 12-13 per cent annually to achieve the share of 2 per cent of world industrial output set for the ECA region. Once such an annual growth rate is assigned to the manufacturing sector, change in the value added to gross product and other endogenous variables of the model are derived accordingly through simulation.

It should be noted that, to account for the interdependence of the manufacturing sector with the agricultural sector in Africa, a composite scenario of the two sectors could be tried to ascertain its effect on the over-all growth rate performance and the derivation of other endogenous variables of the model.

The Strategy for the Second United Nations Development Decade sets a target of little less than 7 per cent real growth in imports and little more than 7 per cent yearly for exports. Through simulation, the value of imports and exports of goods can be derived and consequently that of other variables of the model.

The stabilization policies scenario will cover two aspects, namely the improvement of terms of trade and the stability of terms of trade. The stability aspect will be analysed under assumptions of indexation of export prices on import.

The scenario related to increased transfer of concessional aid will be analysed from the assumption of a certain growth rate in the flow of financial resources from DAC, OPEC and Socialist countries to different groups of developing countries. At present, the annual growth rate will be taken to range between 5 and 7 per cent taking into account priority attention given to special groups of least developed countries, including lowest-income countries.

In many developing African countries, there is a need for a policy of greater self-reliance; that is, a national and/or collective strategy aimed at achieving economic progress through the building of the country's or region's own independent capacities and ability through regional co-operation among African and other developing countries. Such policy would include the following factors.

Resources will be mobilized through co-ordinated national and collective efforts. This is thus a scenario based on the structural parameters of the economy (e.g. increasing marginal propensity to save) which have been discussed above. The Strategy for the Second Development Decade suggested that domestic savings should be increased at an average annual rate of 0.5 per cent in such a way as to reach 20 per cent in the 1980s.

The scenario relating to the indigenization of means of production deals with a manpower policy that adopts methods of production which reflect more efficiently the existing factor mix. A factor-mix policy must be conceived in such a way to be able to determine when, how, why and by whom the various national resources are to be exploited and the terms and conditions of such exploitation. It includes the gradual assumption of responsibility by national officials in the design, reform and application of the appropriate codes of resource exploitation and the establishment of national participation or control over the location, evaluation and exploitation of these resources.

Consequently, since in many African countries the industrial sector and manufacturing in particular tends more often to absorb the labour surplus coming from the subsistence sector when and where industrial plants and investments emerge, it was found appropriate to assume a growth rate of manpower (labour force) in this sector and determine its value added and the subsequent endogenous variables of the model. The determination of labour force in other sectors follows accordingly.

Finally, the restructuring of international trade includes price indexation, development of basic industries to reduce import dependences and cyclical fluctuations in developed countries, regional co-operation and integration and a greater division of labour among developing countries based on their factor endowments or comparative advantages. Some of these items have already been discussed in the structural scenarios (e.g. reduction of marginal propensity to import). Some of them will be analysed again in the light of the objectives and targets of self-reliance.

The above scenarios are of course of a preliminary nature and the success of their formulation and solution will depend on the availability of the required data, computer facilities and soundness of the assumptions. Some adjustment will be inevitable here and there as work proceeds. Once the long-term projections work needed for the Third United Nations Development Decade and hopefully for the year 2000 is completed, it is hoped to concentrate on the development of short- and medium-term projections model. The idea here is to provide in the annual Survey of Economic and Social Conditions in Africa a framework for both a retrospective analysis and a forward look intended to help ECA member countries in designing and implementing appropriate development policies in the face of projected contingencies and fluctuations.

By way of conclusion, it cannot be over-emphasized that the objectives and hence the likely strategies of development in Africa in the coming decades are complex, delicate and intricate. Thus, there is a need for new and deep conceptual insights to comprehend the nature of Africa's quantitative and qualitative development and, consequently to derive some coherent sets of critical and desirable policy instruments. The work presented here is but only an initial effort, which, no doubt, complementarily requires a continuous dialogue among planners and policy makers in Africa along with concerted additional efforts of socio-economic researchers in Africa.

Now the paper turns to the results of the preliminary and trial forecast and projections for a sample of eight African countries prepared by the secretariat in the hope of benefiting from the comments and guidance of African Planners. According to the Report of the Seventh Group of Experts on Programming Techniques chaired by Mr. J. Tinbergen ^{10/} "the word 'projection' has been used in connexion with two different ways of estimating the future value of any variable, namely forecasts and plans. A pure forecast is sometimes defined as an estimate on the assumption that no changes in policies take place; the purest form of a planned development is an explicit optimal development. Both uses are given various interpretations, however, which raises the possibility of a range of different types of projection. A forecast and a planned development are sometimes contrasted to highlight the need for a change in policies and such a comparison is often fruitful. When considering pure forecasts and planned developments, we should not overlook these points: that for longer periods the assumption of constant policy is rarely realistic, that development policies usually will be characterized by a multiplicity of aims rather than a single one; and that a synthesis of aims must be found if any separately is incompatible with others. The assumptions about technology and aims made in a projection must be clearly stated if confusion about the nature of the projection is to be avoided".

^{10/} United Nations publication, Sales No. E.71.11.F.6., pp. 1-2.

Indeed, econometric techniques must go hand in hand with a programmatic approach based on a thorough study of the behaviour of the economy in earlier years; both approaches depend of course on the structural characteristics of the economy under observation in the past and on judgement and common sense as to future development and policies and thus should not be taken in isolation from each other. In fact, econometric techniques help to avoid inconsistencies as regards economic policies and policy objectives and indicate where these policies can be most effective.

It is in this spirit that the results of the trial and preliminary studies are being presented. Above all they are preliminary and suffer from a very weak data base; however, they are presented for the comments of ECA member countries. The preliminary studies are intended to help in developing econometric techniques and adapting them to African conditions and hence such bold attempts should be widely discussed for full value to be obtained from the exercise.

Although the forecast has been extrapolated from past policies and trends and is therefore mechanistic, while the assumption of constant policies over long periods is unrealistic, it is a useful exercise in the sense that comparison with planned development or projections may highlight the need for changes in policies. This should be kept in mind when interpreting forecasts based on historical trends.

It is in planned development or projections that serious problems are encountered by the ECA secretariat, and it is therefore important to have a dialogue with African planners at both the national and the regional levels. As stated before, econometric techniques alone, useful as they are in avoiding inconsistencies in policies, are not enough. Their use must be supplemented by judgement, common sense and a profound knowledge of the economies under study.

None of the information which follows is definitive. These are trial studies designed to enable the ECA secretariat to learn from the experience and expertise of African Planners and vice versa.

This preliminary study is presented in a language which general economists can understand; the econometric and mathematical write-up will be covered in a short annex.

The preliminary and trial studies that follow cover eight countries; namely, Algeria, Egypt, the Ivory Coast, Kenya, Malawi, Nigeria, the United Republic of Cameroon and the United Republic of Tanzania. Their results are presented after a short discussion of the model on which the forecasts and projections are generally based although minor adjustments have been made to cope with individual economies and data constraints. A brief study of recent economic developments is attempted for each country and then followed up with forecasts. In a few cases, some preliminary multiple-aim policy implications for envisaged planned projections or scenarios are also attempted although the quantitative and related scenarios are not yet worked out at this stage.

Briefly, the model is composed of a general production function (with two functions disaggregating total output into two sectors), consumption and investment functions, import and export functions, some balance of payment equations and simple export and import price extrapolations.

The general production function is of the Harrod-Domar type predicated on the assumptions that in African economies (a) capital constitutes the effective constraint on production and (b) the supply schedule of labour is infinitely elastic. Under this function, skilled labour constraints and constraints resulting from technological factors, are expected to be reflected in changes in the incremental capital output ratios. The sectoral production functions relate to agriculture and non-agriculture as a whole. Agricultural output is in some cases based on simple trend equation and in others on the growth elasticity with respect to total (or per capita) output. Non-agricultural output, is based on cumulated investments, imports of goods and in some cases, on output of the agricultural sector. Imports of goods are considered to be important owing to the relatively weak inter-industry relationships in Africa, which tends to result in a relatively high import-content of non-agricultural value added. For other important sectors like manufacturing the growth-elasticity approach is used on the assumption that the major elements in the demand/supply determinants of sectoral output and distribution (e.g. capital, availability of skills, size of the market) are closely correlated with the levels of total income.

In the African case, consumption is postulated to depend on national income (adjusted for terms of trade) and, in a few cases, on lagged consumption to take account of the partial adjustment mechanism for changes in consumption habits. In those cases where the marginal propensities to consume cannot realistically be assumed to be constant over a long period, non-linear forms of the consumption equation are used. One of the components of consumption (private or public) is obtained in a similar way, and the other is obtained as a residual.

The investment function is based on the observations that (a) in African countries investment has hitherto been largely dependent on the capacity of countries to import capital goods which are, in turn, constrained by availability of external resources - foreign reserves or other flows and (b) the level both of domestic saving and of investment opportunities depends more or less on the level of income. Accordingly, the investment function was postulated to depend on total income and foreign exchange reserves.

The trade equations are generally based on both the domestic and the external variables. Thus, imports depend on total domestic income (adjusted for terms of trade), import prices relative to domestic prices and the level of foreign exchange reserves. Exports on the other hand, are based on both the country's supply capacity (domestic output) and the demand situation (total world exports). The disaggregation of both imports and exports follows the SITC main classifications.

In general, the balance of payment functions were included in the model to estimate capital requirements commensurate with the model's endogenous growth rate. Thus, most of the balance of payment equations depend on the corresponding national account variables.

The employment section in the model will try to analyse, at a later stage, (a) the possibilities of creating job opportunities through policies advocating the use of labour-intensive techniques, the expansion of the agricultural sector or other sectoral redistribution of investment and (b) the distribution and allocation of productive employment under strategies (scenarios) of basic needs, etc. Hence, the sectoral labour force is regressed on the total output of the sector to give the sector's employment elasticity.

Before a short review is made of the forecasts and projection results country by country and of the suggested policy changes, it should be emphasized that what are called historical trends or forecasts on the basis of unchanged policies do not necessarily imply continuation of past growth rates of GDP at constant prices. The endogenous growth rates forecast depend on the relationship between the average and incremental capital-output ratios, the average and marginal propensity to consume (or to save), the average and marginal propensity to import on trends in the export growth rates and on the assumptions made for few exogenous variables (export and import price indexes, net transfers from abroad, etc.).

Another fact which has to be kept in mind while interpreting these forecasts is that the constraints from which the economies suffered during the observation period particularly with regard to foreign exchange are completely relaxed under such systems of forecasts. Hence, in practice, the balance of payments is used as an adjuster. This is why most of the forecasts undertaken by ECA, UNCTAD, and the United Nations Secretariat tend to point to accelerated growth rates with large and unrealistic balance of payments deficits. This is a major characteristic of such systems of forecasting.

Algeria

During the years 1970-1975, GDP at constant market prices rose in Algeria at an average annual rate of growth of about 6.8 per cent. In the period 1974-1977, real growth accelerated to 9.3 per cent. During the first half of the 1970s, there was a sharp expansion in fixed capital formation, which rose yearly by 13 per cent, and in imports in volume terms (12.8 per cent); while the changes in the volume of exports were negative (falling by about 4 per cent yearly). However, this was accompanied by a sharp appreciation in the terms of trade, so that a lower export volume was able to finance much higher imports. Agricultural production at constant prices rose yearly by 2.3 per cent, giving a growth elasticity with respect to real GDP of a mere 0.34, while manufacturing output rose at an average of 10.5 per cent, giving a growth elasticity with respect to GDP of 1.54. The import elasticity with respect to GDP was extremely high (1.88).

The forecast, based on the continuation of such parameters points to an accelerated growth of GDP yearly to 11-12 per cent during the period 1980-1990 through continued intensive fixed investment and imports. Even with the volume of exports expected to grow yearly at an average annual rate of about 4 per cent, the deficit in the balance of goods and services will reach new heights if the volume of imports continues to grow at an average annual rate of 13 per cent to the year 1990, unless the terms of trade also show continued improvement and agricultural production expands at an average rate of 5-6 per cent yearly. These figures are based on the assumption that the growth elasticity of the base period will rise from 0.34 to 0.48. Such an increase in agricultural production would represent a sharp break with the past. Past policies suggest that by 1990, the share of fixed investment in GDP will reach 70 per cent against 50 per cent in 1975 and that the trade gap will amount to about 45 per cent of the GDP against some 22 per cent in 1980. These eventualities are untenable and indicate a need to modify policies.

The above forecast suggests the following multi-aimed projection in which GDP rises slightly over the 1970-1975 average (say by 8 per cent a year) and that the rise is coupled with a sharp reduction in the import elasticity to about one third of the historical average and a growth of exports in volume terms of about 8 per cent a year.

The incremental capital output ratio of 5.7 based on performance in the recent past has probably been inflated by large-scale projects with long gestation periods and it is not unrealistic to expect an ICOR of 4.8 once these projects have been completed and are producing.

Under this scenario, the share of fixed capital formation will decline slightly from the 1975 level of about 50 per cent of GDP to 43 per cent in 1990. Domestic savings by the year 1990 will be equal to fixed capital formation with equilibrium in the balance of payments on goods and services. Both public and private consumption are expected to increase at slightly higher rates than GDP as a whole.

A growth rate in export volume below 8 per cent a year or an unfavourable shift in the terms of trade could lead to the emergence of large balance of payments deficits since the expected import elasticity leaves little room for further curbs in imports and, with balance of payments constraints lower average annual growth in GDP might turn out to be unavoidable.

This multi-aims projection scenario suggests that if GDP rises by more than 8 per cent a year between 1975 and 1990, the trade gap will become dominant and if domestic savings are not to be frustrated, export promotion of manufactures coupled with enhanced import substitution, particularly of agricultural and food products through accelerated growth of the agriculture sector will be of fundamental importance. Here regional co-operation with other African developing countries assumes great importance as the projected growth of world trade, on which Algerian exports depend, is much lower than in the past.

Egypt

During the years 1970/1971 to 1976, GDP at constant 1970 factor cost grew by 6 per cent a year. The rate of growth accelerated from 4 per cent a year during the period 1970/1971 to 1974 to about 9 per cent a year in 1975 and 1976. During the same five years, agricultural production rose at an average annual rate of 2.4 per cent; and industry, petroleum and mining, at an average annual rate of 7.1 per cent.

Egypt's economy in recent decades has been characterized by a low level of domestic savings (around 7 per cent of GDP at current prices), indicating a marginal propensity to consume of 0.93. With the share of investment in GDP during the first five years of the 1970s being around 16.5 per cent, the resource gap is high, averaging about 9.5 per cent of GDP. The incremental capital/output ratio is relatively low in Egypt, being around 2.8 to 1, while the import elasticity is extremely high at 1.81.

With a high import elasticity, an extremely low level of domestic savings, a low export performance and a large resource gap, it is obvious that Egypt's growth of GDP in real terms could decelerate to about 4.5 per cent a year during the 1980s unless important and drastic policy changes are introduced.

Some of the changes required are a reduction in import elasticity to about half what it has been in the 1970s, a substantial expansion in national savings from 7.1 per cent of GDP in 1975 to 17-18 per cent in 1990, an annual rate of growth of exports of over 9 per cent and the incremental capital/output ratio remaining as it is.

With these adjustments, a 7-8 per cent average annual growth rate of GDP at constant factor cost might turn out to be feasible with the resource gap as a percentage of GDP falling to about half what it was in 1975 by 1990.

The Ivory Coast:

During the years 1970 to 1975 the growth rate of GDP at constant 1970 market prices rose by 6.5 per cent a year, accelerating to an average of 12.6 per cent in 1975 and 1976.

During the first half of the 1970s, agricultural output in real terms expanded by over 9 per cent a year, and manufacturing grew at about the same rate. Exports in volume terms grew at a rate of over 5 per cent a year, and imports at a rate of 4.7 per cent a year indicating an import elasticity with respect to GDP of a mere 0.72. The incremental capital/output ratio was about 3.15. One characteristic of the period was that total consumption expanded at an average annual rate of 6.7 per cent, which is slightly higher than the growth rate of GDP as a whole, implying a lower marginal propensity to save than the average.

A forecast based on unchanged parameters suggests that GDP at constant market prices can reach an average annual rate of growth of about 10 per cent during the 1980s. Agricultural output is expected to expand at a rate of about 4 per cent and manufacturing at a rate of over 9 per cent. The forecast suggests, however, that with exports growing yearly in real terms by 6.9 per cent and imports by 7.9 per cent (an import elasticity of 0.79 which is a little higher than the historical average), the resource gap will grow to around 10 per cent of GDP by the year 1990. However, the incremental capital/output ratio is projected to decline to 2.2 per cent, which is extremely low.

The above parameters and forecasts suggest that with structural changes in the form of increased domestic savings, some reduction in investment and higher rates of growth of exports of manufactures, an average annual rate of growth of GDP at constant market prices of 8-9 per cent with a resource gap less than 10 per cent of GDP may be attainable.

Kenya

Kenya's GDP at factor cost at constant 1972 prices rose at the average annual rate of 4.7 per cent during the years 1973-1977. There was substantial acceleration from the average rate of 3.4 per cent achieved during the three years 1973-1975 to an average rate of 6.7 per cent a year in 1976 and 1977. Import volume remained almost stagnant, and export volume decreased slightly.

Agricultural production in real terms rose at an average annual rate of 3.7 per cent and during the same period manufacturing at an annual rate of around 11 per cent. With fixed capital formation being about 22 per cent of total GDP, the implicit incremental capital/output ratio was high, at about 4.68. The domestic savings amounted to about 16.8 per cent of GDP the resources gap was about 5.3 per cent of GDP during the period 1970 to 1977. However, the marginal propensity to save was 0.28, well above the average of 16.8 per cent of GDP.

A forecast based on the continuation of the above parameters suggests that GDP in real terms can accelerate to around 6 per cent a year during the 1980s, with agriculture and manufacturing growing at average annual rates of about 4.8 and 9.1 per cent respectively and exports and imports, at around 6 and 5.5 per cent respectively. Higher average annual growth rates up to 8 per cent might be feasible provided that the share of fixed capital formation in GDP increases to about 27 per cent of GDP, the incremental capital/output ratio drops to about 4.3 and the import elasticity is kept to around 1.0. This will continue to be a large trade gap, which may constrain growth of real GDP. Domestic savings may be frustrated unless enough foreign exchange resources are raised to cover the external resources gap. Like other African countries, Kenya will have to strengthen its efforts to diversify its export market, and here again regional co-operation in Africa is of vital importance. The expansion of agricultural production above the 3.7 per cent growth rate achieved during the period 1973-1977 is highly desirable but unlikely.

Malawi

GDP at constant market prices rose during the period 1970 to 1975 at an average annual rate of over 8 per cent (but decelerated to about 5 per cent in both 1976 and 1977) with agricultural production expanding yearly at about 6 per cent and manufacturing by over 10 per cent. Real investment rose at a modest rate of about 4 per cent, exports at a rate of 7.4 per cent and imports at a rate of about 6 per cent, which would indicate an import elasticity of about 0.8. With the share of fixed capital formation in GDP at around 19 per cent of GDP, the incremental capital/output ratio was about 2.3 to 1, showing the relatively high efficiency of capital investment in Malawi.

The forecast made on the basis of these parameters shows a minor deceleration - to about 7.5 per cent a year - during the 1980s with a resource gap of over 10 per cent of GDP in 1990.

If the resource gap is to be reduced and a growth rate of GDP ranging between 7 and 8 per cent a year to become feasible, efforts should be made to accelerate the growth rate of exports to above 10 per cent a year, with import elasticity maintained at below 1. A marginal propensity to save higher than the present average of 14 is also essential with a view to reaching a savings ratio of about 17.0 per cent of GDP by the year 1990. The share of investment in GDP should rise from the 1975 level of about 18.7 per cent to 21.5 per cent in 1990. Under such assumptions the resource gap which amounted to about 5 per cent of GDP in 1975 would remain at the same percentage of GDP in 1990.

Nigeria

During the period 1970/1971 to 1977/1978, GDP at constant factor cost rose in Nigeria at an average annual rate of 7.9 per cent. It decelerated sharply from 10.9 per cent a year in the period 1970/1971 - 1974/1975 to 4 per cent a year in the period 1974/1975 - 1977/1978.

During the period 1970/1971 to 1975/1976 GDP at constant market prices rose at an average annual rate of 7.7 per cent, fixed capital formation at an average annual rate of 27.8 per cent, private consumption at a rate of 4.7 per cent, government consumption at a rate of 24.4 per cent, exports in volume terms at a rate of 6 per cent and imports in real terms at a rate of 25.9 per cent, giving an import elasticity with respect to GDP of 3.4 - an extremely high coefficient. The incremental capital/output ratio was about 3.1.

With these historical parameters, in particular the high import elasticity, it is clear that the trade gap is dominant in Nigeria. If GDP at constant market prices accelerated to an average rate of 13 per cent a year during the 1980s, the rate implied by the historical simulation with no constraints faced in the past, the share in GDP of imports of goods and services in real terms will rise enormously - from the 22 per cent average obtained for the period 1970-1975 to an average of 51 per cent for the 1980s as a whole, and the share of exports in GDP will rise from the 17 per cent figure recorded for the period 1970-1975 to 25 per cent. The resources gap would average 26 per cent of GDP during the 1980s, which is untenable. Here the forecast is based on the assumption that import elasticity with respect to real GDP will be about 1 as compared with the historical elasticity of 3.4. This confirms the necessity not only of reducing import elasticity substantially but also of effecting a large expansion in the volume of exports. Hence the vital importance of regional co-operation, export promotion and import substitution for Nigeria particularly where manufactures are concerned. Obviously, expanding agricultural production well beyond the annual average of 1.3 per cent achieved for the period 1970-1975 is of fundamental importance in this respect.

In view of these parameters, it seems that a growth rate of GDP in real terms ranging between 7 and 8 per cent a year might be feasible if import elasticity is reduced to half its historical level, exports grow in real terms by 5 to 6 per cent a year, and the incremental capital/output ratio kept around 3.5 to take into consideration some future expansion in basic industries, compared with the historical figure of about 3.

Past experience shows that the Nigerian economy could not absorb high and rapidly expanding fixed investment for long periods. The growth rate of GDP of 7-8 per cent seems consistent with an average annual rate of growth in real investment of about 8-9 per cent as compared with the rate of 27.8 per cent achieved for the period 1970/1971-1975/1976. Even with GDP growing at a rate of 7 or 8 per cent, the resource gap might become large, necessitating a further reduction in import elasticity and larger rates of growth in exports in real terms.

The policy changes suggested above are consistent with recent trends in Government policy, but the order of magnitude of the changes in parameters are still to be worked out.

The United Republic of Cameroon

During the years 1970-1975, GDP at constant 1970 market prices rose at an average annual rate of 5.1 per cent. Between 1974 and 1977, this figure dropped to a mere 2.6 per cent. During the first half of the 1970s, fixed capital formation grew at the substantial annual rate of 11 per cent and imports of goods and services in volume terms at the annual rate of 4.7 per cent while the volume of export of goods and service rose by about 6.6 per cent a year. Real agricultural output rose at a rate of 2 per cent a year, and manufacturing at an annual rate of 4.3 per cent, giving growth elasticities of 0.39 and 0.84, respectively. Import elasticity with respect to real GDP was about 0.92. The implicit incremental capital/output ratio, which was 2.9 to 1 during the first half of 1970s, rose to 6 to 1 during the period 1974-1977.

The forecast based on the assumption that these parameters would remain the same and policies would not change indicates that the growth of GDP will decelerate to a rate of 4.2 per cent a year, with agricultural output rising at an average annual rate of 3 per cent and manufacturing at the low rate of only 2.7 per cent. The growth rate of imports forecast is 3.7 per cent a year, implying an import elasticity of 0.88. This implies that exports will grow by 6.2 per cent a year, which would result in a substantial surplus in the balance of payments on goods and services. That surplus would represent 13 per cent of GDP in 1990 compared with about 6 per cent in 1975.

The significant cumulative surplus in the balance of payments forecast suggests that a rate of growth well above the 1970-1975 average of 5.1 per cent is feasible (around 6.5 per cent a year) provided certain policy changes are made. The most important change involves accelerating agricultural production to a rate of 5.5 per cent a year, and manufacturing to a rate of about 10 per cent a year. At the same time exports in real terms must grow at an annual rate of about 7 per cent and imports at the rate of 6 per cent a year, implying an import elasticity with respect to GDP of about 0.92 per cent, which is about the same as the historical average.

The annual rate of growth of consumption, both private and government, should be limited to about 5 per cent a year in order to boost domestic savings as a percentage of GDP from the 18 per cent achieved in 1975 to about 25 per cent by 1990. The resource gap projected for 1990 is between 5 and 7 per cent of GDP, which seems feasible.

Here again, the assumed average annual rate of growth of exports in volume terms of 7 per cent up to the year 1990, which is basic for the realization of this scenario, is higher than the rate projected for growth in the volume of world trade. Regional co-operation among developing African countries thus assumes great importance if the United Republic of Cameroon is to achieve this rather high export target. If agricultural production increased at an average annual rate of about 5.5 per cent and manufacturing at a rate of about 10 per cent a year, the country could expand its export trade with neighbouring countries.

The United Republic of Tanzania

During the years 1970 to 1975, GDP at constant 1966 market prices rose at an average annual rate of 4.3 per cent, accelerating to 5.1 per cent during the years 1976 and 1977. During the first five years of the decade, agricultural production fell at an average annual rate of 0.4 per cent, while manufacturing rose at a rate of 5.1 per cent a year. Exports at constant prices declined at an average annual rate of about 6 per cent and imports at the rate of 2.8 per cent a year, implying a sharp decline in import elasticity.

With the share of fixed capital formation in GDP averaging around 20 per cent, the implicit incremental capital/output ratio was high (about 4.7). Since the share of domestic savings in GDP was about 15 per cent, there was a resource gap of about 5 per cent.

If it is assumed that past parameters will remain the same and that there will be no foreign exchange constraints, the country's GDP in real terms could accelerate at a rate of about 6.3 per cent a year during the 1980s. Even with a forecast rate of growth of exports of about 5.5 per cent a year and an import elasticity of 1.2, the resource gap would amount to over 10 per cent of GDP compared with the 5 per cent obtained in 1975.

A growth rate of over 6.0 per cent a year may become feasible if the incremental capital/output ratio reflecting efficiency in fixed investment were to decline from the 4.7 level obtained for the period 1970-1975 to 2.9 in the 1980s. Another important policy change implied is the promotion of domestic savings. During the first half of the 1970s, a marginal propensity to save of a mere 0.05 was recorded against an average savings ratio of about 15 per cent of GDP. It is essential to achieve a higher than average marginal savings ratio if the share of domestic savings in GDP is to rise above its 1970-1975 average.

Another important policy change which is recommended is an effort to expand the rate of growth of exports in volume terms to over 7 per cent a year and to increase the volume of imports particularly of capital goods needed to raise the level of fixed capital formation. With the import content of fixed capital formation higher than GDP as a whole, an increase in imports of little less than 7 per cent a year is essential for achieving a rate of growth of GDP slightly above 6 per cent.

If exports and import substitution are to be promoted and the resource gap is to be rectified along the policy of collective self-reliance and self-sustained growth, the agricultural sector must perform better than it did during the first half of the present decade. Co-operation with other developing countries in Africa is also of fundamental importance in this regard.

Conclusions

The trial and preliminary forecasts and projections for a sample of 8 African countries summarized in this paper lead to a number of important and broad conclusions, two of which are outlined as follows:

1. The forecasts which are based on unchanged parameters, suggest the possibility of some acceleration in rates of growth of GDP in real terms. However, the continuation of past parameters implies the relaxation of foreign exchange constraints. In the past performance was hampered by insufficient foreign exchange resources so that in many cases higher rates of growth of GDP culminated in large balance of payments deficits, which are hard to predict realistically. With reasonable balance of payments deficits assumed, the rates of growth of GDP in real terms will be lower than those forecast and perhaps lower than those achieved in the past in a number of cases.

2. To achieve higher growth rates in the 1980s than in the past (possibly ranging between 6 to 8 per cent a year) would necessitate a number of important structural policy changes at the macro level. An effort would have to be made to, for instance, improve the efficiency of capital investment substantially, boost exports, promote the use of domestic resources for purposes of import substitution, strengthen co-operation with other African countries, increase agricultural production and achieve a faster rate of industrialization. Such policies would help African countries to achieve collective self-reliance and self-sustained growth. Since the projected rate of expansion in world trade in real terms is one of only 5 per cent a year for the 1980s against 8 per cent in the 1960s, regional co-operation assumes great importance because for most countries in the region it is imperative for foreign trade to grow at a rate which is well above 7 per cent a year. Regional co-operation is required now that prospects of trade with the developed countries are less favourable than they were.

So far three preliminary scenarios have been roughly sketched for eight African countries only and these countries can hardly be said to be fully representative. The first scenario comprises a forecast made on the assumption that there will be no changes in domestic parameters; the second is a discussion of the feasible growth rates and of the policy changes needed and the third, which complements the second, is the first part of a scenario for regional co-operation and points to the importance of reversing the recent decline in intra-African trade and expand trade among African countries and other developing countries at much higher rates than in the past.

Reference was made in part I of this paper to scenarios which are provisionally envisaged. The ECA secretariat looks forward to a detailed discussion of this preliminary paper, which it believes will help it to refine the scenarios and to formulate feasible policy recommendations for the Third United Nations Development Decade hopefully with projections to the year 2000.

A N N E X I

T H E M O D E L V A R I A B L E S

Note

To facilitate the circulation of data among various organizations of the UN family, some of the symbols used in this model are the same as in New York's or UNCTAD's data bank. Therefore, (1) variables without any prefix are expressed in constant local currency (base 1970); (2) prefix \$ means constant US dollar (base 1970); (3) \$* means current US dollar, and (4) the prefix B means balance of payments variables.

<u>Variables</u>	<u>Definitions</u>
YDF	GDP at factor cost - constant local currency (c.l.c.)
YA	Value added in agriculture - (c.l.c.)
YNA	Value added in non-agricultural sectors as a whole (c.l.c.)
YMF 1/	Value added in manufacture (c.l.c.)
YMI	Value added in mining (c.l.c.)
YTR	Value added in transport (c.l.c.)
YSO 2/	Value added in other sectors
YD	GDP at market prices (c.l.c.)
YDT	Domestic income (c.l.c.)
YNT	National income (c.l.c.)
I.YD	Index of GDP (1970 = 1)
C	Total consumption (c.l.c.)
CP, CG	Private consumption (c.l.c.), government consumption (c.l.c.)
IF	Total gross fixed investment (c.l.c.)
IFA	Gross fixed investment in agriculture (c.l.c.)
IFMI	Gross fixed investment in mining (c.l.c.)
IFMF	Gross fixed investment in manufacture (c.l.c.)
IFTR	Gross fixed investment in transport (c.l.c.)
IFSO 3/	Gross fixed investment in other sectors (c.l.c.)
IS	Changes in inventories (c.l.c.)
XG0 + 1\$	Exports of SITC commodities 0 and 1 - constant US dollar (c.u.d.)
XG2 + 4\$	Exports of SITC commodities 2 and 4 (c.u.d.)
XG3 \$	Exports of SITC commodities 3 (c.u.d.)
XG5-9\$	Exports of SITC commodities 5 to 9 (c.u.d.)
XG\$	Exports of SITC 0 to 9 (c.u.d.)
X\$	Total exports of goods and non-factor services
XG\$ ^B	Exports of SITC 0-9 current US dollar (cr.u.d.) balance of payments - b.p.
X\$ ^B	Total exports of goods and non-factor services (cr.u.d.) b.p.
XS\$	Exports of non-factor services (cr.u.d.) national accounts

1/ The sector electricity, gas and water is included in the manufacturing sector.

2/ This variable is the aggregation of values added in construction (YCON), commerce (YCOM), administration (YADM) and other services (YSEO).

3/ This variable is the aggregation of gross fixed investments in construction (IFCON), commerce (IFCOM), administration (IFADM) and other services (IFSEO).

<u>Exports</u>	<u>Definitions</u>
XS\$*B	Exports of non-factor services (cr.u.d.) - b.p.
XWO + 1\$	World exports of SITC 0 and 1 (c.u.d.)
XW2 + 4\$	World exports of SITC 2 and 4 (c.u.d.)
XW3\$	World exports of SITC 3 (c.u.d.)
XW5-9\$	World exports of SITC 5 to 9 (c.u.d.)
XW\$	World exports (c.u.d.)
MGO + 1\$	Imports of SITC 0 and 1 (c.u.d.)
MG2+3+4\$	Imports of SITC 2,3, and 4 (c.u.d.)
MG5+6+8+9\$	Imports of SITC 5,6,8 and 9 (c.u.d.)
MG7\$	Imports of SITC 7 (c.u.d.)
MG2-5\$	Imports of SITC 2 to 5 (c.u.d.)
MG\$	Imports of SITC 0 to 9 (c.u.d.)
MS\$	Total imports of goods and non-factor services (c.u.d.)
MG\$*B	Imports of SITC 0 to 9 (cr.u.d.)
MS\$*B	Total imports of goods and non-factor services - b.p. (cr. u.d.)
MS\$*	Imports of non-factor services (cr.u.d.)
MS\$*B	Imports of non-factor services (cr.u.d.) - b.p.
YF\$*B	Net factor income to abroad (cr.u.d.) - b.p.
YF\$*	Net factor income to abroad (cr.u.d.)
TC\$*	Trade gap (cr.u.d.)
R\$*	Level of foreign exchange reserves (cr.u.d.)
F\$*	Flow of resources from the DAC, multilateral sources and other sources (OPEC, socialist countries, etc.) (cr.u.d.)
TFP\$*	Net private transfers from abroad (cr.u.d.)
TB\$*	Trade balance (cr.u.d.)
NFSB\$*	Non-factor services balance (cr.u.d.)
CAB\$*	Current account balance (cr.u.d.)
P	Implicit GDP deflator in local currency - 1970 = 1.
PX\$	Unit value index of exports in US dollars - 1970 = 1
PM\$	Unit value index of imports in US dollars - 1970 = 1
PXCOMi	Export price index of product i - 1970 = 1
PMCOMj	Import price index of product j - 1970 = 1
NLT	Total labour force
NLA	Labour force in agriculture
NLMF	Labour force in manufacture
NLMI	Labour force in mining
NLMT	Labour force in transport
NLSO 1/	Labour force in other sectors
ER: 70	Exchange rate in 1970 (local currency per US dollar)
E	Index of exchange rate - 1970 = 1
T	Time
N	Population

1/ This variable is the aggregation of labour force in construction (NLCON) commerce (NLCOM), administration (NLADM) and other services (NLSEO).

A N N E X . . I I

T H E M O D E L E Q U A T I O N S

SECTION A. DOMESTIC SUPPLY EQUATIONS

I. The General Production Function

1. $YDF_t = a_0 + a_1 \sum_{j=0}^{t-1} IF_j$ $a_1 > 0$ 1960 = 0

IIA. Sectoral Production Functions

The Agricultural Sector

2. $\text{Log}YA = b_0 + b_1 T$, $b_1 > 0$, $T = 1$ in 1950

The Non-Agricultural Sectors: The general production equation of non-agricultural sectors as a whole.

3a. $YNA_t = c_0 + c_1 \sum_{j=0}^{t-1} IF_j + c_2 \text{MG}\$ _t \cdot \text{ER}.70$ $c_1 > 0$

3b^{1/} $YNA_t = \bar{c}_0 + \bar{c}_1 \sum_{j=0}^{t-1} IF_j + \bar{c}_2 \text{MG}\$ _t \cdot \text{ER}.70 + \bar{c}_3 YA_t$ $c_2 > 0$
1960 = 0
 $\bar{c}_1 > 0, \bar{c}_2 > 0, \bar{c}_3 > 0$

IIB. Sectoral Production by Growth Elasticity Approach

4. $\text{Log} Y_{it} = d_{1i} \text{log} YDT_t$; $i = 1, \dots, 5$

- Where Y_1 = value added in agriculture = YA
 Y_2 = value added in manufacturing, water, electricity and gas = YMF
 Y_3 = value added in mining = YMI
 Y_4 = value added in transport = YTR
 Y_5 ^{2/} = value added in other sectors (including commerce, public administration, construction and other services) = YSO

^{1/} This equation is to be used for countries where non-agricultural output is related to agricultural sector. YNA is sometimes obtained as a residual.

^{2/} Obtained in some cases by residual.

III. Conversion Equation

$$5. YD_t = h_0 + h_1 YDF_t \quad h_1 \geq 1$$

SECTION B. DOMESTIC DEMAND EQUATIONSI. Consumption

$$6a. C_t = i_0 + i_1 YNT_t + i_2 C_{t-1}; \quad 0 < i_1 < 1; \quad 0 < i_2 < 1$$

$$6b. \frac{1}{\log} C_t = \bar{i}_0 + \bar{i}_1 \log YNT_t$$

Government consumption

$$7a. CG_t = k_0 + k_1 YNT_t + k_2 CG_{t-1} \quad 0 < k_1 < 1; \quad 0 < k_2 < 1 \quad \text{or}$$

$$7b. \frac{1}{\log} CG_t = \bar{k}_0 + \bar{k}_1 \log YNT_t \quad \text{or}$$

$$7c. CG_t = C_t - CP_t$$

Private consumption

$$8a. CP_t = l_0 + l_1 YNT_t + l_2 CP_{t-1} \quad 0 < l_1 < 1; \quad 0 < l_2 < 1 \quad \text{or}$$

$$8b. \frac{1}{\log} CP_t = \bar{l}_0 + \bar{l}_1 \log YNT_t \quad \text{or}$$

$$8c. CP_t = C_t - CG_t$$

II. InvestmentTotal fixed investment

$$9. IF_t = m_0 + m_1 YDT_t + m_2 YDT_{t-1} + m_3 R\$_t. \quad ER.70; \quad m_1 > 0, \quad m_2 > 0, \quad m_3 > 0$$

1/ These equations will be used for countries where the marginal propensity to consume (mpc) varies appreciably.

Sectoral investment^{1/}

$$10. \quad IF_{it-1} = n_i (Y_{it} - Y_{it-1}); \quad i = 1, 2, \dots, 5.$$

Where IF_1 = investment in agricultural sector = IFA and $Y_1 = YA$
 IF_2 = " in mining sector = IFMI & $Y_2 = YMI$
 IF_3 = " in manufacturing, water, electricity and gas = IFMF & $Y_3 = YMF$
 IF_4 = " in transport = IFTR & $Y_4 = YTR$
 IF_5 = " in other sectors (including commerce, public administration, defence, construction and other services) = IFSO & $Y_5 = YSO$

SECTION C. EXPORT DEMAND EQUATIONS (National Account)I. Exports by SITC Groups^{2/}

$$11. \quad XG0 + 1\$_t = o_0 + o_1 \frac{YA_t}{ER.70} + o_2 XW0 + 1\$_t; \quad o_1 > 0, \quad o_2 > 0$$

$$12. \quad XG2 + 4\$_t = p_0 + p_1 \frac{YMI + YA_t}{ER.70} + p_2 XW2 + 4\$_t; \quad p_1 > 0, \quad p_2 > 0$$

$$13. \quad XG3\$_t = q_0 + q_1 \frac{YMI_t}{ER.70} + q_2 XW3\$_t \quad q_1 > 0; \quad q_2 > 0$$

$$14. \quad XG5 - 9\$_t = r_0 + r_1 \frac{YNA_t}{ER.70} + r_2 (1-\rho) XW5-9\$_t; \quad r_1 > 0; \quad r_2 > 0$$

^{1/} In country models, the sectoral investment equation will be used during projections with the relevant sectoral ICORs given by n_{1i} , $i = 1, 2, \dots, 5$. These ICORs will be approximated by the average sectoral ICORs obtained by time-series or cross-section analysis of a sample of African countries on which disaggregated sectoral data is available. The equation to be estimated in this case is

$$\sum_{j=0}^{t-1} IF_{ij} = n_{oi} + n_{1i} Y_{it}$$

^{2/} A more detailed disaggregation will be tried at a later stage according to the main commodity exports of African countries.

^{3/} For this equation total demand is not taken as the explanatory variable as it would tend to exaggerate the individual country's exports of manufactured goods. Instead, only the share of the developing countries' demand for manufactures is used. This is tenable under the assumption that the African countries' exports of manufactures will be on the grounds that in these commodity groups the supply response to world price is substantial.

II. Exports of goods and total exports

15a. $XG\$_t = s_0 + s_1 \frac{YDF_t}{ER.70} + s_2 XW\$_t \quad s_1 > 0; s_2 > 0$

15b. $X\$_t = \bar{s}_0 + \bar{s}_1 XG\$_t; \bar{s}_1 > 0$

SECTION D. IMPORT DEMAND EQUATIONS (National accounts)

I. Imports by SITC Groups

16. $MG0 + 1\$_t = e_0 + e_1 \frac{YA_t}{ER.70}; e_1 < 0$

17. $MG2+3+4\$_t = t_0 + t_1 \frac{YD_t}{ER.70} + t_2 \frac{PM\$_t}{P_t} \cdot E_t + t_3 R\$_t; t_1 > 0, t_2 < 0, t_3 > 0$

18. $MG5+6+8+9\$_t = u_0 + u_1 \frac{YD_t}{ER.70} + u_2 \frac{PM\$_t}{P_t} + u_3 R\$_t; u_1 > 0, u_2 < 0, u_3 > 0$

19. $MG7\$_t = v_0 + v_1 \frac{IE_t}{ER.70} + v_2 R\$_t; v_1 > 0, v_2 > 0$

II. Imports of goods and total imports

20a. $MG\$_t = x_0 + x_1 \frac{YDT_t}{ER.70} + x_2 \frac{PM\$_t}{P_t} \cdot E_t + x_3 R\$_t; x_1 > 0, x_2 < 0, x_3 > 0$

20b. $M\$_t = \bar{x}_0 + \bar{x}_1 MG\$_t; \bar{x}_1 > 0$

SECTION E. PRICES

21. $P_t = y_0 + y_1 PM\$_t \cdot E_t + y_2 I.YD_t + y_3 P_{t-1}; y_1 > 0, y_2 > 0, y_3 > 0$

$$22. \frac{d}{dt} (PX\$) = \sum_i A_i \frac{d}{dt} (PXC\text{OM}_i) \quad A_i > 0 \quad \sum_i A_i = 1$$

$$23. \frac{d}{dt} (PM\$) = \sum_j B_j \frac{d}{dt} (PM\text{COM}_j) \quad B_j > 0 \quad \sum_j B_j = 1$$

SECTION F. EQUATIONS RELATED TO BALANCE OF PAYMENTS

$$24. XG\$*B_t = \varepsilon_0 + \varepsilon_1 XG\$_t \cdot PX\$_t; \quad \varepsilon_1 > 0$$

$$25. X\$*B_t = f_0 + f_1 X\$_t \cdot PX\$_t; \quad f_1 > 0$$

$$26. XS\$*B_t = X\$*B_t - XG\$*B_t$$

$$27. MG\$*B_t = \delta_0 + \delta_1 MG\$_t \cdot PM\$_t; \quad \delta_1 > 0$$

$$28. M\$*B_t = \xi_0 + \xi_1 M\$_t \cdot PM\$_t; \quad \xi_1 > 0$$

$$29. MS\$*B_t = M\$*B_t - MG\$*B_t$$

$$30. YF\$*B_t = \lambda_0 + \lambda_1 \sum_{j=0}^t TG\$*_j \quad \lambda_1 > 0$$

$$31. YF\$*_t = \zeta_0 + \zeta_1 YF\$*_t \quad \zeta_1 > 0$$

$$32. R\$*_t = \pi_0 + \pi_1 F\$*_t + \pi_2 TG\$*_t + \pi_3 R\$*_{t-1}; \quad \pi_1 > 0, \pi_2 < 0, \pi_3 > 0$$

SECTION G. EMPLOYMENT EQUATIONS

I. Total employment

$$33. \log NLT_t = \delta_0 + \delta_1 \log YBF_t$$

II. Sectoral employment^{1/}

34. $\log NL_{it} = \rho_{i0} + \rho_{i1} \log Y_{it}; i = 1, 2, \dots, 5.$

NL ₁	=	Labour force in agriculture	=	NLA and Y ₁	=	YA
NL ₂	=	" " in manufacturing	=	NLMF & Y ₂	=	YMF
NL ₃	=	" " in mining	=	NLMI & Y ₃	=	YMI
NL ₄	=	" " in transport	=	NLTR & Y ₄	=	YTR
NL ₅	=	" " in other sectors (including public administration and defence, commerce, construction and other services)	=	NLSO & Y ₅	=	YSO

SECTION H. OTHER IDENTITIES

35. $YDT_t = YD_t + X\$ \cdot ER.70 \left(\frac{PX\$}{PM\$} - 1 \right)_t.$

36. $YNT_t = YDT_t - \frac{YF\$*_t}{PM\$_t} \cdot ER.70 + TFP\$*$

37. $IS_t = YD_t - C_t - IP_t - X\$ \cdot ER.70 + M\$_t \cdot ER.70$

38. $TG\$*_t = M\$*_t - X\$*_t + YF\$*_t$

39. $CAB\$*_t = TB\$*_t + NFSB\$*_t - YF\$*_t + TFP\$*$

40. $NFSB\$*_t = X\$*_t - M\$*_t$

41. $TB\$*_t = XG\$*_t - MG\$*_t$

^{1/} Equation 34 will be regressed on a time-series or cross-section basis for those countries where disaggregated employment data is available. Then, the estimated employment elasticity ρ_{i1} will be used to derive the sectoral employment growth rates

$r_{Ei} = \rho_{i1} / r_{Oi}$ $i = 1, \dots, 8$ where r_{Oi} is the growth rate of the output in the i th sector.

Classification of Variables

Endogeneous Variables^{1/}

YDF, YA, YNA, YMF, YMI, YTR, YD, YDT, YNT, I.YD, YSO

C, CP, CG.

IF, IFA, IFMI, IFMF, IFTR, IFSE, IS

XG0+1\$, XG2+4\$, XG3\$, XG5-9\$, XG\$, X\$, XG\$*B, X\$*B, XS\$*B

MGO+1\$, MG2+3+4\$, MG5+6+8+9\$, MG7\$, MG\$, MG\$*B, M\$*B

MS\$*B, YF\$*B, YF\$*, TG\$*, R\$*, TB\$*, NFSB\$*, CAB\$*, P, PX\$, PXO-9\$S, PM\$, PMO-9\$S

NLT, NLA, NLMF, NLMI, NLTR, NLSE

Exogeneous Variables

PXCOM_i, PMCOM_j, XWO+1\$, XW2+4\$, XW3\$, XW5-9\$, XW\$, ER.70, E,T, F\$* , TFP\$*

^{1/} Some of these variables could be introduced exogeneously depending on the scenarios in which projection exercises will be based. The lagged variables are, of course, exogeneous.

