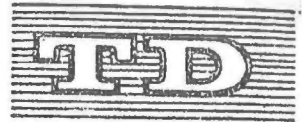




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SUBSTANTIAL NEW PROGRAMME OF ACTION FOR THE 1980s FOR THE LEAST
DEVELOPED COUNTRIES: CONTRIBUTIONS BY UNITED NATIONS
BODIES AND SPECIALIZED AGENCIES

Quantitative Analysis of the Problems and Perspectives of the African
Least Developed Countries in the Framework of the Third
United Nations Development Decade

Contribution by the Economic Commission for Africa^{*/}

^{*/} Summary and conclusions of a paper, dated 22 November 1979, prepared for the Conference on the Problems and Prospects of the Least Developed African Countries (Addis Ababa, 17-22 March 1980).

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1. The following study was undertaken in pursuance of General Assembly resolution 3508 (XXX) of 15 December 1975 which called for the examination of long-term trends in the economic development of the world, Economic and Social Council resolution 2090 (LXIII) of 25 July 1977 and resolution 4 (II) of the Intergovernmental Group on the Least Developed Countries as further elaborated in the Arusha Programme for Collective Self-reliance and Framework for Negotiations. The study provides a series of projections of the major macro-economic variables covering the 1980s for the least developed countries.
2. The approach adopted is to build a macro-model out of a system of variables, which are considered as determining each other by mutual interactions while others are treated as exogeneous to the system and are used either as policy objectives or as externally determined. The simultaneous system or model is generally based on accepted technological or behavioural relations and parameters, which are estimated by statistical analysis of past behaviour. To an extent this science is still in its infancy, since many variables that influence economic movements like the political, social, institutional and ecological factors are not easily amenable to quantification and/or normally elude long-range projections. For this reason, econometric techniques must go hand-in-hand with a pragmatic 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 in the past and on judgment and common sense to future developments and policies and thus can not be isolated from each other. In fact, econometric techniques help to avoid inconsistencies in respect of economic policies and policy objectives and also indicate where policies can be most effective. It is for this reason that the ECA secretariat, through repeated visits to individual member countries, endeavoured to maintain a dialogue on the projection models, the data and parameters used, and the obtained results of the projections.
3. The period used for this derivation of structural parameters is in most cases the years from 1965 to 1977. In all cases, the main sources of data included the ECA national accounts data, FAO agricultural commodity production data and the respective national statistical and other publications. It should be noted that in most cases there were enormous difficulties arising out of the general paucity, unreliability and lack of disaggregated data and it is clear that there is an urgent need to improve the statistical capability of most of the African least developed countries. Technical and financial assistance is needed to enable these countries to use efficiently the traditional instruments of data collection, namely censuses, sample surveys and administrative records. It is thought that it would be useful if the ECA secretariat kept in close touch with the national governments to discuss the various results of projections and other studies, including the data on which these are based. In this way, means can be continuously sought to build up the statistical infrastructures and to improve the data base in directions in which it is most likely to be relevant and useful.
4. The least developed countries in this study are those enumerated by the Committee for Development Planning of the United Nations on the basis of the following criteria, namely: (a) per capita GDP of \$US 125 or less in 1970-1972; (b) the share of manufacturing of less than 10 per cent of GDP; or (c) the literacy rate below 20 per cent of the population. In this study the 20 African least developed countries were subdivided, for projection purposes, into four groups on the basis of their per capita GDP in 1977 at constant 1970 prices. The subdivisions were as follows:

- Group I - Botswana, the Sudan, the Gambia, Lesotho;
- Group II - the Niger, the Central African Republic, the United Republic of Tanzania, Somalia, Malawi, Uganda;
- Group III - Benin, Guinea, the Comoros, Cape Verde, Chad;
- Group IV - Ethiopia, Burundi, Rwanda, Mali, the Upper Volta.

It should be noted that the classification was made of widely different territories simply on the basis of their per capita GDP and it should not be informed that the groups are territorially, or in any other way, homogenous. The classification was made primarily on the basis of a per capita income above \$US 110 for group I, a per capita income between \$US 100 and \$US 109 for group II, a per capita income of \$US 75 to \$US 99 for group III, and a per capita income below \$US 75 for group IV. It is indeed necessary to exercise caution in using per capita income as the major criterion for classification.

5. Some of the common features found in the analysis of the African least developed group of countries is the heavy dependence on agricultural land in the economy. Out of the 20 countries, 17 countries have over 80 per cent of their population dependent on agriculture, and another three countries have 70 per cent depending on the agricultural sector, and in most cases there is a very high correlation between the arable land available per capita and the income per capita. Secondly, despite the high dependence on agriculture there was generally very poor performance in agriculture, mostly declining in growth rate. Industry in most countries was growing at a higher rate than GDP, showing that there has been some structural shift of GDP from agriculture to industry. The service sectors have been growing relatively fast, possibly due to the growth of tertiary infrastructures. The rate of investment has been going up in most countries. Consumption has been growing, but not much faster than population, implying an almost insignificant rise in the real standard of living.

6. A review of the nature of performance of the groups as distinct from the individual countries within a group, and a comparison with the least developed countries as a whole, was undertaken to indicate what kind of problems the groups have and whether there is a case for treating them differently for projection purposes. In terms of GDP growth between 1965-1970 and 1970-1977 it was found that while in 1965-1970 there was no association between the different performance of the groups, in 1970-1977, which was generally a bad period, the poorer countries performed worse. It seems that, due to lack of diversification, the poorer economies have less resources and capacity to absorb shocks from any sudden shift either in natural conditions or in external economic impacts.

7. The sectoral growth rates reveal that the less disadvantaged countries among the least developed countries had better industrial growth rates during the entire 1965-1977 period. These countries also achieved better performance in agriculture in 1970-1977, again pointing out their comparative strength in hard years. Investments follow a similar pattern, with almost zero growth in investments for the subgroup of the poorer least developed countries. While investments grew at an average annual rate of 10.3 per cent in subgroup I, the average growth rates for subgroup III and subgroup IV were only 2.5 and 0.8 per cent respectively.

8. The structure of GDP also indicates that generally speaking the percentage of GDP going to consumption is higher in subgroups III and IV. Thus, while in 1965-1977 the average share of consumption in GDP for subgroup I was 86.7 per cent, it was 96.1 and 91.6 per cent for subgroups III and IV respectively. The production structure also shows that by and large the countries with relatively higher per capita incomes have more diversified economies. In the period 1965-1977 the

respective shares of agriculture, industry and services for subgroup I were 39.6, 25.2 and 35.2 per cent. For subgroup II, the corresponding shares were 47.0, 23.9 and 31.9 per cent, while subgroup IV had 52.8 per cent of GDP in agriculture, only 18.9 per cent in industry and 28.3 per cent in services.

9. The model developed for the group of least developed countries tries to capture the production (supply), consumption and trading structures of the small economies, generally characterized by:

(a) a large proportion of value added in agriculture, with only few agricultural commodities accounting for the major portion of the value added in agriculture;

(b) having most of the capital in fixed investments in power, construction, transport and manufacturing, which are considered as an aggregated industry sector;

(c) a tertiary sector denoted by services, which behaves as a residual dependent on the output in the primary and secondary sectors;

(d) import levels which are determined by the availability of external resources but which tend to increase with income.

10. Production is estimated as value added in three sectors, namely agriculture, industry and services. In agriculture, two alternative approaches were tried. The first alternative obtains total value added in agriculture through a log linear production function using acreage and labour as the independent variables. Increased acreage is assumed to involve capital investment and, therefore, the agricultural production function may be said to be of a simple Cobb-Douglas type. The second alternative involves the use of the quantities of agricultural commodities. From a number of the most significant and important commodities (which should constitute over 80 per cent of gross output in agriculture), the gross output of agriculture is derived using the appropriate 1970 producer prices. The final agricultural value added is then obtained from the gross output estimate by subtracting an estimate of the intermediate inputs in agriculture.

11. Value added in the industrial sector is obtained from the cumulated capital stock in the industrial sector (viz. manufacturing, power, transport, construction and mining) via the incremental capital/output ratio. In the countries where some specific activities (e.g., mining) are very important as a single sector, these are estimated separately. The value added in the service sector is obtained as a function of the sum of value added in agriculture and industry. From the sectoral value added, total output - GDP at factor cost - is obtained by summation.

12. On the demand side of the economy, the traditional consumption function is used. Total and private consumption are separately regressed on total income (as a proxy for the often used national disposable income). Government consumption is then obtained as a residual from total and private consumption. In most of the cases, investments are taken as a policy variable. However, in some cases a distinction is made between autonomous and induced investments. In these cases the induced investments are obtained from the system as a function of the level of income, while the autonomous investment - usually government development expenditure - is left as an exogenous policy variable. The model distinguishes two types of exports, namely historical exports and implied exports. Historical exports are obtained from the export quantities of relevant export commodities of a particular country using the appropriate export prices. The export quantities of the commodities are

obtained from a function which relates the quantities of a commodity that are exported and the quantities produced. The implied exports are taken as a balancing item in the national account identity. Finally, imports are obtained from a function which relates the volume of real imports to the level of real income and the previous year's value of real exports. In the absence of reliable data on the external resources, the previous year's value of real exports was taken as a proxy. From the model functions above, the trade gap and the domestic savings gap are calculated from the appropriate identities and the more dominant of the two obtained.

13. The details of the results of the statistical estimation of the various model parameters for each individual country, for the subgroups and for the whole group of the least developed African countries, are discussed in the text of this paper. For the group as a whole, the agricultural function showed that there is a larger elasticity for labour than for acreage. The elasticity with respect to labour was estimated to be almost three times that of acreage. In other words, this shows that labour intensity is far more important than expansion of acreage for increased agricultural output. The total combined elasticity of both labour and acreage was 1.34037, which indicates that there is an increasing return to scale in agriculture. This feature of the agricultural function was also noticed in a regional analysis of agricultural output for all developing African countries. The subgroups of the African least developed countries classified by income groups did not, however, have a well-behaved agricultural production function owing to the widely differing climatic and soil conditions in countries which might belong to the same income group.

14. The estimation of the industrial output function resulted in relatively high incremental capital/output ratios. This, of course, can be explained by the fact that industry in the analysis included transport, construction, etc., and in the poorer countries there is usually a large amount of infrastructural expenditure before output is significantly increased. The group of African least developed countries as a whole was estimated to have an incremental capital/output ratio (ICOR) of 7:1, while for the subgroups the ICOR ranged from 2:1 (for the first subgroup) to 9:1 (for the subgroup with the smallest per capita income).

15. The consumption function results clearly confirmed the hypothesis that the poorer the countries, the less they can find resources for domestic savings and that income has to be raised for the poorest countries before domestic resources can be diverted to investments. The first subgroup of the least developed countries was estimated to have a marginal propensity to consume of 0.75, the second group a marginal propensity to consume of 0.87, while the third and last subgroups had marginal propensities to consume as high as 0.97 and 0.99 respectively. For the group of African least developed countries as a whole the marginal propensity to consume was estimated at 0.89.

16. The import function results showed that the poorer countries in the African least developed countries had a higher marginal propensity to import with respect to GDP, which is understandable. There was, however, no specific association between the level of imports and the lagged exports. Perhaps the greater inflow of external resources which relieves some of these countries from the tightness of their foreign exchange position might explain that lagged exports cannot be taken as proxy in some cases.

17. Two sets of projections or scenarios were made for the individual countries, the subgroups of countries and for the least developed group of countries as a whole. In all cases the first scenario is based on the assumption of no change in the historical structural parameters and the economic policies pursued. This scenario, which is a forecast, is intended to indicate, by comparison, the main direction and

areas for policy changes if an improvement in performance is to be achieved. The second planned scenario tries to simulate and derive the implications for a target growth rate in GDP of 6 per cent yearly during the 1980s. In those cases where it was believed that a country has had a drastic break from the past pattern of development only the planned scenario was attempted. It should be borne in mind that according to the Report of the Seventh Group of Experts on Programming Techniques chaired by Mr. J. Tinbergen, "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, while 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 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."

18. The parameters and alternative scenarios discussed are based on existing and explicitly known potentials in the countries and also on given patterns of resource utilization. They do not completely take into account the large possibilities that are not yet explored. These possibilities include, inter alia, the natural resources, the human infrastructure and potentials that could drastically change the performance in a short time.

19. On the basis of past trends, and in the absence of drastic domestic and international measures to assist the African least developed countries, the forecasts for 1980-1990 were that the least developed countries as a whole would grow slowly and might just keep pace with the current growth rate of population. For the group of the African least developed countries as a whole an average growth rate in GDP of 2.9 and 3 per cent is forecast for the 1980-1985 and 1985-1990 periods respectively. The historical trends scenario also points to the probability that the different subgroups, which are already different in respect of per capita GDP, are likely to grow at rates varying directly with their present level of GDP. In other words, the past disparities in performance are likely to continue in the future. The first subgroup, with relatively high per capita GDP, is forecast to grow at an over-all average annual rate of 3.9 per cent in 1980-1985 and 4 per cent in 1985-1990. In comparison, the fourth subgroup, with the lowest per capita income is forecast to grow at an average over-all rate of 2.7 and 2.8 per cent yearly in the corresponding periods. In other words per capita income would remain almost stagnant.

20. In agriculture, output for the group of African least developed countries is forecast to grow by an average annual rate of 1.8 per cent in the period 1980-1990. The projected agricultural performance varies from one subgroup to another. It is apparent that performance in agriculture will depend on a variety of circumstances, including weather. Industry is forecast to grow at 5.5 per cent yearly for subgroup I, at 5.4 per cent yearly for subgroup II, at 3.4 per cent yearly for subgroup III, and at 4.1 per cent yearly for subgroup IV during the 1980-1990 period.

21. On the demand side, consumption is projected to grow much faster than GDP, which implies that on the basis of past patterns, policies and trends, the domestic savings of the least developed countries on the whole will decline as a percentage of GDP. This decline is forecast to be most serious in the poorest subgroup. Investments show higher growth rates in the subgroups with higher per capita GDP. Thus, while on the basis of historical trends the first subgroup is forecast to have an increase of 8.5 per cent per annum in real terms in investments in 1980-1990, the fourth subgroup with the lowest per capita income, is forecast to achieve a mere 0.9 per cent annual growth in real investments. The share of investments in total GDP is forecast to be around 14 per cent in the 1980s for the group of the least developed countries as a whole. In spite of the forecast of lower investment, the forecasts indicate that if the historical trends continue, the poorer of the least developed countries will have an increasing savings gap. Exports are generally projected to lie within the range of 12 to 25 per cent of GDP in the 1980s, while imports are forecast to range from 16 to 36 per cent of GDP. In general, exports as a percentage of GDP are projected to be far smaller for the poorer countries than for those that are better off. For the least developed countries as a group, the trade gap is projected to reach about 7 per cent of GDP in 1990, as compared with 4.7 per cent in the base year 1975. In other words, for the group of least developed African countries as a whole, and under this dismal scenario, net external resources inflow at constant prices has to increase 2.3 times between 1975 and 1990, or at an average annual rate of over 6 per cent.

22. In summary, the over-all picture for the least developed African countries shows that the rate of growth of GDP at constant 1970 prices will average around 3 per cent yearly in the 1980s if the past trends and policies are assumed to continue. The slow growth is particularly pronounced in agricultural output, which is forecast to grow less than 2 per cent during 1980-1990. Industry is forecast to grow relatively slowly, at an average annual rate of 4.4 per cent during 1980-1985 and by 4.5 per cent during 1985-1990. Total investment is forecast to grow by 4.7 per cent per annum between 1980 and 1985 and by about 5 per cent yearly during 1985-1990. The relative increase in investment is, however, not forecast to be accompanied by a commensurate increase in total output, owing to the rather inefficient utilization of capital. Total consumption is projected to increase only slightly in terms of its share in GDP from the 1970-1977 average of 88.4 per cent to around 89.5 per cent, giving a low domestic saving rate of a mere 10.5 per cent of GDP. At this saving rate the saving gap would be around 3.6 per cent of GDP in 1985-1990. Assuming that the historical import elasticity for the group as a whole (estimated to be greater than unity) will not change drastically in the coming decade, imports are forecast to increase at average annual rates of 4.6 per cent during 1980-1985 and 4.9 per cent during 1985-1990. This will imply that if the historical trends in exports prevail there will be a gradual increase in the trade gap from around 5.6 per cent of GDP in 1980 to around 7.1 per cent of GDP in 1990, or over 6 per cent yearly in real terms. Under these forecasts, it is apparent that the resulting trade gap is dominant for the group of least developed countries as a whole. This points to the need for adjustments that are applicable when the trade gap is dominant. These adjustments include additional import replacement, export promotion or the conversion of savings into consumption. Regional co-operation among developing countries would also be of importance in the pursuit of such policies.

23. The implications of the forecast on the basis of the continuation of past trends and policies are clearly disastrous. Per capita income would remain almost the same, with mounting mass poverty, unemployment and social upheavals. There is therefore an urgent case for making some structural changes. In a scenario of a target growth of GDP of 6 per cent yearly in the 1980s, it was projected that agriculture and industry will have to grow much faster than in the past for the group of least developed countries as a whole. Agriculture will have to attain a

growth rate of 4 per cent yearly while the industrial sector will have to grow at an average annual rate of about 8 per cent. To attain these growth rates requires, inter alia, improved capital efficiency, increased labour and land intensity and productivity, a growth rate in real investment of around 7 per cent and increased domestic savings. A target growth rate in GDP of 6 per cent yearly, and with the domestic savings rate remaining at the historical level, will result in a savings gap projected to increase at an average annual rate of 8 per cent yearly and approaching 4 per cent of GDP by 1990. The trade gap will only be brought to controllable levels if a specific, and perhaps optimistic, assumption of an average annual growth rate of 7 per cent in real exports is fulfilled. Under this assumption, the trade gap would stabilize at around 5.7 per cent of GDP in the decade. This does not mean that under the planned scenario the volume of net inflow of foreign resources required would be less than under the historical forecast. In actual fact net resources inflow at constant prices for the planned scenario of 6 per cent growth rate in GDP for the African least developed countries would have to be increased almost three times between 1975 and 1990, or at an average annual rate of 7.4 per cent. In the 1980s the average annual rate of growth in net resource inflow would have to be about 6.6 per cent, or nearly double in the decade. This emphasizes that an initial big push in net resources inflow in the early 1980s is essential for an immediate crash programme. In addition, it should be borne in mind that those estimates of the trade gap and the derived net foreign resources requirement do not include debt servicing and other factor payments abroad, which could actually augment the balance-of-payments gap. Also, it should be emphasized that if the high export growth rate of 7 per cent does not materialize, the trade gap will be higher than the above estimates.

24. The two scenarios give some indications of the implications for the eradication of mass poverty, basic needs satisfaction and the necessity for regional co-operation. The historical scenario implies a nearly stagnating per capita income and hence no mitigation of mass poverty. The second planned scenario of a target 6 per cent growth in GDP implies an average annual increase of about 3.6 per cent yearly in real per capita income (taking a 2.4 per cent annual average growth in the total population of the African least developed countries). Obviously, even this accelerated increase in real per capita would not be sufficient to satisfy basic needs and at the same time raise domestic resources required for a self-sustained growth and self-sufficiency at the national level.

25. The parameters and the implications of the alternative scenario clearly show that the African least developed countries have had, and may well continue to have, a very poor economic performance unless special measures, policies and development strategies are formulated and implemented. The policies that emerge as critically important relate both to the short run and to the long run. Of paramount importance in the short run is the necessity for the African least developed countries to achieve self-sufficiency in food. This calls for urgent action to increase the growth of over-all agricultural output to about 4 per cent yearly over the coming decade, which in turn necessitates (a) increasing the productivity of both land and labour, (b) substantially increasing the arable land area through irrigation and land reforms, (c) increasing investment in agriculture, with a better and more rational balance between investments for export-crop production and investments for food-crop production, (d) extensive planning of integrated rural development programmes, (e) increasing extension services and agricultural research, (f) improving the rural/urban terms of trade, and (g) making better organization and training and the fuller utilization of manpower.

26. In the Arusha programme endorsed by UNCTAD V, the least developed countries themselves specified the kind of emergency assistance they needed on the basis of a crash programme. These countries emphasized the need for expanded assistance for

projects already identified, or in the pipeline in the fields of nutrition and health, education, transport and communication, housing and the creation of employment. In the field of agriculture they emphasized the need for massive support for fertilizers and assistance to improve management, maintenance and repair, and to improve the efficiency of existing infrastructure. It was also pointed out that financial and commodity support on an extension basis was necessary for local small-scale employment generation. These due needs, and the many others, of the least developed countries deserve strong recommendation and support.

27. From the earlier observations it seems that the poorer countries of the group of least developed countries are more likely to suffer from a savings gap, while the less disadvantaged countries are more likely to feel the constraints of a trade gap. Hence appropriate approaches to development assistance might seem desirable. Investment in the poorer countries is miserably low and their consumption propensities, both average and marginal, are high. For these countries it is desirable that international aid for capital development should be added to that already given for the purpose of meeting essential consumption needs. These countries require aid in sufficient quantities to enable them to cross over from the level of almost zero growth rate to moderate rate of growth in investment. For those countries where savings are being generated at some level, international efforts should assist these countries' earnings through exports by giving them better prices for their products, by the creation of such funds in order to stabilize the prices of their exports and by offering them better terms on a preferential basis.

28. The countries themselves will need to undertake considerable and drastic changes in their consumption levels. Specifically, there will be a need to lower both the marginal and the average propensities to consume to around 85 per cent. Concomitantly, imports and particularly the marginal import rates for consumer goods, have to be lowered substantially. These efforts on consumption and imports of consumer goods must also be accompanied by an increase in the efficiency of capital so as to ensure growth and to improve the standard of living. Some of the factors causing the high incremental capital/output ratios in the economies of these countries have to be improved. These include the minimization of undercapacity utilization through, inter alia, integrated regional approaches to industrial development and improved management of the productive enterprises, reduction of long gestation periods for projects, and drawing up more suitable projects that lead to quick production of physical commodities. Also, realizing that in many instances, the poor utilization of manpower potential is at the core of efforts to alleviate poverty in particular, and to improve economic performance in general, these countries' policies should emphasize the fuller utilization and better training of their manpower resources.

29. The long-term policies for the group of African least developed countries mainly concern the task of achieving a fundamental restructuring of the patterns and lifestyles of development. UNCTAD resolution 122 (V) noted in this respect that the most important feature was the need for transformational investment to lead to (a) fuller exploitation of the natural resources, (b) development of an industrial base, (c) establishment of optimal production units like small-scale industries linked to the relevant sectors, especially agriculture and the informal sector.

30. The present paper is just an attempt to throw some light on some aspects of the problems of the African least developed countries. Its limitations lie, inter alia, both in the methods used and in the fact that it deals mainly with macro-variables.

It is clear that using more elaborated techniques, both quantitative and qualitative, and more detailed data would give more precise and more concrete recommendations at national and regional levels. However, the study presented here points to the fact that unless drastic structural changes are undertaken, the African least developed countries are likely to face more serious problems in the 1980s than those faced in the 1970s. It also suggests that there is room for the achievement of these structural changes especially in making more efficient use of the enormous natural and human resources of the continent. This, obviously, cannot be achieved without domestic policies for increased self-reliance and self-sustainment and the strengthening of regional co-operation as was emphasized in resolution 332 (XIV) entitled "Development strategy for Africa for the Third Development Decade" adopted at the fourteenth session of the Commission, by the fifth meeting of the Conference of Ministers, held in Rabat in March 1979.