TWO-GAP MACRO PROJECTION MODELS:

A CRITICAL REVIEW APPLIED TO GHANA

by

A. GYASI NIMARKO

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Department of Economics
McGill University
Montreal, Canada

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ABSTRACT

NAME: A. GYASI NIMARKO

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SUMMARY

The thesis surveys the literature on two-gap models, particularly those formulated by Chenery and his associates and Vanek to analyse the problems of development. These models focus attention especially on capital requirements of developing countries and how such capital inflows are needed to fill either a savings gap, trade gap, or both so as to achieve desired growth rates. The theoretical framework of these models are compared and their main conclusions and usefulness examined.

One of these studies, the Chenery-Strout model, is modified slightly and applied to Ghana. The empirical research indicates a dominance of the savings gap for the country in 1972 and 1975. Foreign aid required by Ghana will thus be determined by the savings gap rather than the trade gap if the country is to achieve the target rate of growth postulated. The implications of the model as applied to Ghana are evaluated.

TO THE MEMORY OF MY PARENTS:

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and

Ēno Abenaa Adowaa

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A. GYASI NIMARKO

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CHAPTER I

INTRODUCTION

Aims and Objectives of the Study

In the process of development, a typical less developed country, requires a substantial increase in investment and a substantial volume of imports of capital goods, materials and services. If either domestic savings are insufficient to finance an increased volume of investment or exports are insufficient to finance such imports, a rapid development cannot be attained. These gaps between investments and savings, exports and imports could, however, be filled if external assistance in the form of foreign aid and private investment becomes available.

Several papers have appeared in recent times to investigate the problems raised by this fundamental necessity. These papers have proposed methods for estimating the external resources "needed" by a developing country in filling either the saving-investment gap, the export-import gap, or both, and the determination of the actual policy alternatives facing that country. This approach has been termed a "two-gap analysis". It especially focuses on the constraints to accelerated growth and how some of these constraints could be removed through the use of external resources. The two-gap diagnosis also describes the existing conditions of disequilibrium, either structural or created by distortions.

Although the two-gap models establish some of the criteria for effective programmes of foreign assistance, the extent to which aid recipients are able to carry out the required policies can only be determined from a study of actual cases. Empirical studies have thus been designed to evaluate development performance, and to produce estimates of aid requirements for a number of countries including Israel, Colombia, Greece and Pakistan, under alternative assumptions as to each country's internal policies.

This paper is concerned with the application of one of these models - the Chenery and Strout model - in a slightly modified form to the Ghanaian economy, as it existed through 1957 to 1969.[1] Ghana is similar to other developing economies where trade and capital imports play a significant role in the development process. There is, however, the need to specify a model to suit the particular conditions of the country.

The problem we shall examine is that given the facts from past performance, present structure and future prospects of Ghana, what trade or savings gap, if any, is implied by various target rates of growth and what policies are available for closing the gaps. We choose 1957-1969 as the observation period because of the availability of data of some quality and consistency for that period. The model is then conducted to identify some indications of actual (historical) gap dominance,[2] 1972, and to forecast the economic performance of the Ghanaian economy for 1975.

The subject matter can be classified under four distinct headings. First, there is a survey of some of the existing literature on these projection models in Chapter 2. We shall examine rigorously the

theoretical framework provided to evaluate their validity and operational usefulness. Attention will also be paid to the empirical analysis of these models. In Chapter 3, we examine the general characteristics of the Ghanaian economy as it existed from 1957 through 1969. The purpose is to familiarize overselves with the general economic conditions of the country and the historical data for variables, which play a major role in our projection model. A simple but operational model to forecast the required foreign aid for Ghana is developed in Chapter 4. This model is a modified form of the Chenery-Strout model; it permits us to identify the generalizations and refinements introduced to tackle the problem we have set. In Chapter 5 the modified Chenery-Strout model is applied to Ghana to determine aid requirements, and to stress the difference among the alternative policy mixes that are appropriate when there are savings and import constraints to development. Conclusions of the applicability of the modified model to Ghana and possible areas of further work are mentioned briefly in Chapter 6.

The Concept of a Gap

In order to clearly illustrate the problem we have set to examine, it seems important to explain what the projections of trade and savings gaps are and what they purport to show.

A projection is a calculation designed to indicate what the value of some variable would be at some future time, as compared with the base year variables, if certain specified conditions prevail. Projections of the type contained in the present study seek to throw light on the magnitude of foreign resource requirements associated with given target rates of growth in Ghana.

There are two gaps which we want to project: savings gap and trade gap.[4] The UNCTAD study defines the "savings gap" as the excess of investment requirements over domestic savings at the indicated growth rate. This definition is generally similar to what we shall employ in our model. We define the savings gap as the difference between required investment and potential savings. This is a "hand" or "incompressible" gap[5] because it equals the difference between required investment and the "maximum possible" savings that the domestic economy could provide. Estimating this gap as the difference between required investment and projected actual savings (using the marginal propensity to save) could result in a "soft" or "compressible" gap if projected savings were less than potential savings.

A "trade gap" is defined by the UNCTAD study as the excess of projected actual imports (using the marginal propensity to import) of goods and services (including investment income payments, e.g., interest payments, profits, etc.) over the corresponding projections of export earnings. This estimate of the trade gap by UNCTAD is a "soft" or "compressible" gap, if actual imports include any inessential imports. That is, the gap could often be reduced by policy measures such as devaluations, controls on the imports of consumer goods and a policy of import substitution. We rather define the trade gap in our modified model as the estimate of the difference between required imports and projected exports. This is a "hard" or "incompressible" gap.

The trade gap reflects the extent to which imports and exports of developing countries would tend to diverge, on the basis of past experience, if these countries sought to achieve the overall growth rates indicated. It does provide an indication of the magnitude of

policy adjustments required if the growth objectives of developing countries are to be realized.

Identification of Foreign Resource Requirement

Accounting identities for an open economy give us the following relationship:[6]

$$I - S \equiv M - X$$

If there is an inflow of foreign aid to help the country in its development, it will appear twice in this accounting framework, first as the difference between investment and the amount that can be saved within the economy and second as an equal excess of imports of goods and services over exports of goods and services.

This definition of the equality of saving gap and trade gap, both ex ante and ex post, has been one of the views found in the literature. While it is true that the magnitude of the savings gap and of the trade gap must be the same ex post (meaning that foreign resources must be able to plug both gaps simultaneously), it is not necessarily true that the two statistics are equal ex ante; one of the gaps is usually larger than the other. This is because entirely different factors and economic agents (decision makers) act upon the four central aggregates - savings, investment, exports and imports - in the long run. The discrepancy between the two gaps is therefore a reflection of structural rigidities, domestic or international, which make it impossible, in the short run, to transfer resources freely from domestic production to exports or import substitution.

For example, if a country had sufficient domestic savings to meet all its capital needs (i.e., had no savings gap) it might still experience a trade gap, and a corresponding constraint on growth. Such

a situation would arise if some of the goods required could not be produced at home and had to be imported, and demand for the country's main exports were not strong enough to provide sufficient earnings to pay for these goods.

In this case, the manner in which the economy adjusts will depend on whether adequate capital inflow to cover the trade gap can be obtained (i.e., there is assumed availability of aid to plug the larger of the two gaps) or whether additional outlets can be found for exports. This shows that the equality of the two gaps is a necessary, but not a sufficient condition. Sufficiency requires, in addition, the equality of the two gaps to the foreign resources actually forthcoming. A condition that will guarantee the actual realization of the rates of growth assumed is that the foreign resources be as large as the larger of the two gaps estimated. For this reason, the larger of the two gaps becomes an estimate of foreign resource requirements consistent with the overall and sectoral rates of growth. It is this notion that is held in this paper.

FOOTNOTES

[1] The two-gap approach was used in a series of country studies carried out by UNCTAD. See United Nations Conference on Trade and Development (UNCTAD), Trade Prospects and Capital Needs of Developing Countries, New York, 1968. Ghana was one of the countries studied. We could probably not call the study on Ghana, a two-gap scheme, since only estimates, but no policy analysis, were made for the savings gap. Apart from this, no separate study has been done on Ghana, based on the two-gap approach, except for projections made in the various development plans of the country.

[2] For an example of ex post "forecast" of economic performance, see M.K. Evans, "An Econometric Model of the Israel Economy 1952 to 1965," Econometrica, Vol. 38, No. 5, September 1970, pp. 624-650.

[3] For further explanation of the nature of projections see UNCTAD study, op. cit., pp. 8-9.

[4] See the following sources for further explanation of the gap concept: UNCTAD study, ibid., pp. 5-6 and p. 13; and G.M. Meier, Leading Issues in Economic Development, (second edition), Oxford University Press, N.Y., 1970, pp. 255-6.

[5] We speak of incompressibility (hardness) or compressibility (softness) of trade and savings gaps. Supposing that the estimated trade gap is dominant and the savings gap is negligible. Assuming that imports entering the dominant gap were only imports of raw materials and investment goods (i.e., essential imports) and there were no domestically produced consumer goods readily exportable, then the trade gap is incompressible. If, however, these are imports of non-essential consumer goods or services and that these could be eliminated by an appropriate commercial policy without serious political or social repercussions, and if exports could be expanded in the short run without frustrating development, then the trade gap is a soft one. Also, if total investment could not be reduced in the short run and savings could not be increased above the estimated level, then the savings gap is incompressible; otherwise it is soft. For further explanation of compressibility of gaps, see J. Vanek, Estimating Foreign Resource Needs for Economic Development, McGraw Hill, New York, 1967, pp. 107-8.

[6] For the definition of the variables and the derivation of this identity refer to Chapter 2 of this study.

CHAPTER 2

A SURVEY OF THE LITERATURE

Theoretical Analysis

Dual gap models were first formulated by Chenery and Bruno but the clearest exposition is due to Chenery and Strout and Vanek.[1] The main building block of the two-gap theory is the recognition that foreign capital can be used to fill either a saving gap or a trade gap. This proposition has become popular in one form or another in recent years. The distinction between these two gaps is analytically useful, especially for purposes of development planning.

These studies utilize models in which import choices and alternative levels of external capital are explicitly considered. Multi-sectoral analyses are used in most of them to derive relations among capital inflow, import requirements, and savings rates for the planning periods considered. In these disaggregated open models, there is postulation that it is the balance-of-payments constraint rather than the capacity to make resources available for investment which is a general factor limiting growth.

The foreign exchange constraint operates when it is impossible to increase exports and decrease consumer goods imports sufficiently to fulfill the requirements of additional imports of capital goods. The central idea of the gap analysis is that development tends to create situations which, at various points in time, are characterized by a scarce supply of factors "required" for continued development. A gap between the

quantity supplied and that required slows growth. The country can therefore grow only at a lower rate determined by the ratio of export capabilities to national income and the ratio of imported capital goods and foreign-materials inputs required to produce an additional unit of domestic output. The "foreign exchange constraint", it is argued, will then be encountered before the "savings constraint", and part of domestic savings which could have supported a higher rate of growth will not be fully utilized because of the inability to obtain the additional imports necessary for a higher level of investment.[2]

When growth is limited by such bottlenecks, there is under-utilization of other factors. The inflow of external capital therefore plays the dual role of raising both this specific resource limit and the savings limit on the rate of investment, thereby permitting fuller utilization of all resources and a continuation of development.

Chenery and his associates concentrate most of their attention on a saving-investment gap and an import-export gap. A target rate of growth is postulated and a capital-output ratio is accepted as a datum. Hence, a specific saving rate is derived as necessary to achieve the target rate of growth. Similarly, a fixed relationship between imports and growth or output is postulated from which one may derive the level and rate of growth of imports required. A saving gap dominates when the domestic saving rate is below the level necessary to permit investment required to achieve the target, while imports are adequate. Aid covers the savings gap, and permits the achievement of the target. A trade gap appears, however, if with adequate savings, the flow of imports is below the required level. Here aid breaks the import bottleneck and permits the target to be reached. In this latter case, the key assumption

is that the country is unable to transform its potential savings into exports.

The Origin and Existence of Two Gaps

In the analysis of the existence of two gaps emphasis is given to a "structural" type of argument.[3] It is argued that in any given time period a developing economy can neither increase its exports nor decrease its imports without experiencing underutilization of resources in the economy.

Export earnings for the bulk of products are largely determined by foreign demand conditions, and "a rapid increase in exports typically requires the development of new export products which is limited by productive capacity as well as organizational and institutional factors."[4] Imports are required by the nature and limited flexibility of the productive system and of the composition of consumer demand. With such rigidity assumed, if the trade gap is larger than the saving gap, saving potential is "wasted" as resources released from consumer goods production can be used neither to produce capital goods nor exports. To change this structure requires foreign resources.

Chenery and Strout discuss the effects of the exchange rate on the two gaps in terms of how the rate affects investment allocation. They write:

> "If investment and other allocation decisions are based on the exchange rate that is appropriate for a substantial flow of aid, they are not likely to induce sufficient import substitutions or increase exports to make possible future reductions in the capital flow. Planning should be based on higher equilibrium exchange rate that would be appropriate to a declining flow of aid in order for the necessary changes in the productive structure to be brought about in time."[5]

After aid is reduced, the short run inflexibility and unadaptability of the system prohibits adjustments that would have to be made if the two gaps were not to appear.

Assumptions Underlying the Models[6]

The dual gap models are elegant in their expositions but they have built-in weaknesses which reduce the sharpness of their predictive powers. To understand these shortcomings and the disagreement among the writers in their conclusions, let us discuss some of the assumptions underlying the framework.

Some two-gap models assume that in underdeveloped economies production is inflexible in the short run over a large range of cash crops.[7] Most of these crops are tree crops, for example, cocoa and coffee, which require a long gestation period. Policies designed to increase exports of such crops would take a considerable length of time to yield the required results. In the short run such inflexibility in the productive structure manifests itself via a country's inability to reduce its imports through export promotions. Chenery and Strout write that the "existing economic structure at any moment of time also limits the feasible growth of export earnings", and "a rapid increase in exports typically requires the development of new export products, which is limited by productive capacity as well as organizational and institutional factors."[8] This is the notion of structural disequilibrium implicit in two-gap models - a structural phenomenon in the sense that it does not lend itself to short-term policy measures.

Any long-run adjustment to bring about structural flexibility is considered to be a modification of the short-run model of Chenery and

Strout. The two writers acknowledge the possibility of searching out a "more efficient growth path" under the assumption of "coordinated development policies and a planned adjustment of the trade gap and savings gap,"[9] for the purpose of reducing the projected aid requirement.

Bruton believes that trade gaps exist because of various distortions in underdevelopment economies which inhibit rapid exports and import substitution programmes. For example, there are cases where machinery cannot be used because it is not appropriate for the specific conditions in the importing country. Even where the right type of machine is imported coordinated efforts are not undertaken to train local personnel to do maintenance work and ensure a regular flow of spare parts and raw materials. If a "structure" exists that cannot be fully exploited because of such distortions, then there is a misallocation of investible resources.

Suppose a trade gap appears due either to distortions emphasized by Bruton or to Chenery and Strout's structural arguments. Aid can provide the resources to correct or change this set of circumstances to some extent. Aid can also provide the resources with which an economy can continue to function acceptably without bringing about the elimination of the distortions or changing the structure. By relieving the pressure on the system, aid may reduce both the incentive to make painful changes and delay the undertaking of the necessary domestic policy issues.

Bruton's other contribution to the two gap discussion is his suggestion that there are forms of productive investment in human resources, research, etc., that do not require imported capital goods. So long as this type of investment can be expanded with positive productivity, the

trade limit cannot prevent the translation of potential savings into investment and the possibility of excess savings disappears. Bruton's suggestion provides an indirect way of substituting domestic savings for imported capital goods by changing the composition of investment.

Several of these two gap papers[10] have considered ways in which an increase in output might be achieved by fuller use of potential savings. Using all the potential savings is, however, not equivalent to getting rid of the trade gap constraint nor does it reduce the desirability of external capital.

In the literature, the emphasis is placed on the estimation of the gaps and there is the assumption that foreign aid will be available to fill the maximum gap. This is a partial picture restricted to the demand for foreign aid. The other half of the picture, the supply of foreign aid, is completely absent from the framework of the analysis. Growth is bound to be the product of the interaction of demand and supply of aid. On the assumption made, aid recipients will encounter little difficulty in adjusting via the pleasant route of higher imports, lower exports and lower savings. A situation which, unfortunately, is more likely to occur in the real world, arises when the kind of foreign aid required in the country's development plan is not available; the aid may be available but for projects other than the needed ones.

Secondly, it is difficult in most cases, to get the technique that could be run by local people, without relying very much on expatriate personnel. Besides, foreign resources may be given in the form of suppliers' credits. If the prices of the commodities supplied from the donor country are higher than the equilibrium world prices, then the recipient country's options are distorted. A fourth possibility arises

when the aid giver is willing to denote less than the maximum gap and hence the aid recipient is forced to make the unpleasant kind of adjustments in the opposite direction.[11] The existing papers do not deal with these more realistic types of adjustments to disequilibrium and are therefore basic weaknesses of the analysis of the "demand" for aid.

Another implicit assumption underlying the basic model for projecting required capital inflow is that the various parameters are taken to be known. This assumption skips over a major problem in estimating these parameters, especially the marginal potential savings rate and the marginal potential essential import rate (defined in Chapter 4).

Basically, the problem is that these parameters can only be estimated when data are available. The linear equations of some of the models make use of potential savings and potential essential imports rather than the actual savings and actual imports. This is because the writers were interested in estimating "hard" or "incompressible" gaps instead of "soft" or "compressible" gaps, using actual macro variables. And from this procedure, the maximum attainable rate of growth for an economy is derived. Since we can only observe actual savings, we can make our estimation, if we assume that actual savings in that period were equal to potential savings. Similarly, since we can only observe actual imports, our estimation is possible, if only we assume that actual imports in that period were equal to potential, essential imports.

Vanek uses an alternative method to estimate the increase in imports by taking "historical data" on actual imports, then divides them into essential imports and in essential imports.[12] Where he draws the line between those two categories of imports is arbitrary, leading to a probable underestimation or over-estimation of parameters. In Evans's

econometric study of the Israeli economy, equations were estimated from 1952 to 1965. Only fourteen observations or less (most of the sample periods were truncated due to lack of data) were thus available and the problems of small-sample bias are likely to be serious.[13] For this reason the estimates of say, the standard errors and other goodness-of-fit statistics, may be even less reliable than usual. We gather from these studies the fact that lack of adequate data may serve as an impediment to estimation.

There is a further underlying assumption. Devaluation is ruled out as a feasible policy instrument to reduce the trade gap.[14] One main reason is given. With very high prices of foreign exchange the very policies that are assumed to guarantee a given rate of growth may be rendered cumbersome, if not impossible. When there is a devaluation the signals of the external price change are transmitted to the markets for tradeables in the domestic economy; such a transmission is not automatic. The stimulation of desired expansion of exports and curtailment of inessential imports will depend on the presence of discretionary trade distortions.

Devaluation is normally undertaken to improve the balance of payments, and a devaluation may therefore be judged successful to the extent that it has led to an improvement in the balance of payments. By increasing the profitability of export sales relative to local sales, devaluation should stimulate exports; and by making imports more expensive relative to local goods and services, devaluation should discourage imports. On both counts the balance on goods and services should improve.

A convenient way of viewing the aggregate balance of national

income and expenditure is with the identity.

$$Y \equiv C + I + X - M \quad \ldots\ldots\ldots\ldots (1)$$

where Y = output, C = consumption, I = investment, X = exports, M = imports, all of which are value flows of goods and services per period. Rearranging the terms yields,

$$Y - E = X - M \quad \ldots\ldots\ldots\ldots (2)$$

where E = C + I, domestic expenditure; Y - E, internal balance on current account; and X - M, balance on external current account. Corresponding to the internal balance on current account is the internal balance on capital account - the difference between domestic savings (S) and investment (I):

$$S - I = X - M \quad \ldots\ldots\ldots\ldots (3)$$

where S = Y - C. The internal balances thus, must be matched, ex post, by the external balances (this is only by definition).

Relationship (2), shows that any trade surplus reflects an excess of output over domestic expenditure. It follows that to reduce a trade deficit requires a corresponding reduction in the gap between output and expenditure. Without such a reduction, there can be no improvement in the trade balance.

The argument as whether devaluation would improve a trade balance is more usually based on a structuralist form of elasticity pessimism.[15] The first point is that the elasticity of demand for imports is likely to be low when imports are concentrated on raw materials, semifabricated products and capital goods, a structure prevalent in less developed countries. In an advanced stage of easy import substitution programme, imports depend largely on output rather than income and are not very sensitive to relative

price changes. There is more room for substituting home production for imports of foodstuffs, although it will usually take some time to bring this about. Moreover, import liberalization will actually result in a reduction of the prices of those imports most lightly restrained before the devaluation, so consumption of them will be encouraged.

There is greater diversity of experience with regard to exports. If the export good is cocoa, for example, which is scarcely consumed in the producing countries, increasing exports require enlarged output and development of new export products. Neither of these courses may be easy in the short run, although such crops can sometimes be more intensively harvested.

When it comes to incentives to enlarge output and expand capacity, the principal reallocation is between import-competing goods and exports, rather than between home goods and all foreign-trade goods. This is because by assumption imports have already been stringently limited by high tariffs, disadvantageous exchange rates, and quantitative restrictions, all of which create a strong price incentive for domestic production. Some exports may also have been subsidized and, where this is so, devaluation accompanied by removal of the subsidy may leave no new incentive to increase production for export. But, generally speaking, exports are heavily penalized and devaluation has the effect of reducing the premium for producing import-competing goods for the home market and increasing the premium for production for export, with the principal shift in incentives coming between these two sectors.

New investment to increase the capacity to export will require that investors expect the improvement in their position to last (durability

of new regime), that the devaluation and associated policies will establish a new regime which will not simply slide back into the old configuration of policies. Establishing these expectations is one of the most difficult tasks of those carrying out the reform.

Furthermore, where manufactures can be competitively exported under the new regime, conversion from domestic manufacturing may be relatively easy; but opening up export markets for manufactured good for the first time require the establishment of new marketing channels. The shift from domestic to export crops in agriculture is generally easier, but for tree-crops like cocoa, the required gestation period may be several years.

For all of these reasons, some pessimism with regard to price elasticities would be quite justified for many developing countries, at least in the short run, but it does not usually go far enough to prevent devaluation from improving the trade balance.

The results of the empirical studies of twenty-four devaluations involving nineteen different countries, by Richard N. Cooper, were as expected, mixed.[16] First, effective devaluation was usually less than nominal devaluation, and often substantially less. Secondly, more often than not, effective devaluation for imports was larger than that of exports. In fourteen cases imports actually did fall following devaluation, and in several other cases they rose negligibly; export values on the other hand, rose from minimal to moderate in all but five cases.

In fifteen cases, including countries such as Argentina (1959), Brazil (1964), Ecuador (1961), and Peru (1958), the balance on goods and services improved in the year following devaluation. The balance, however,

remained negative in most of these cases. The essence of devaluation in such cases was to reduce the trade deficits to the point at which it can be readily financed by capital imports, not to eliminate it completely. In sixteen cases, there was an improvement in the net reserve position (monetary balance was positive) in the year following devaluation, and in seventeen cases the monetary balance showed an improvement over the year preceding devaluation. Twelve of these latter cases also involved an improvement in the balance on goods and services. On the whole, twenty-one of the twenty-four cases showed an improvement in either the current balance or the monetary balance or both. Only Colombia (1965), Korea (1960), and Turkey (1958) experienced a worsening in both the current and the monetary balances.

Cooper's study indicates that currency devaluation seems to be successful in many countries, in the sense of improving the balance on goods and services. Only in a few cases did devaluation simply failed to have its intended effects. The price elasticities (given by the difference between computed and actual exports and imports by using the effective devaluation) implied by the degree of improvement were quite low, as would be expected in the period immediately following devaluation; but they were high enough for success. These elasticities ranged from .02 to 1.54 on the export side, and from .08 to .94 on the import side.

Empirical Analysis

Ideally, evidence can be used to support or refute the central thesis of an economic model. Apart from the theoretical framework provided in two-gap models, a number of tests are conducted to judge the dominance of either the trade gap or saving-investment gap.

The importance of trade limitation or what we shall call "trade

gap pessimism"[17] of much of the literature is stressed in a number of papers. The empirical analysis of the Chenery and Strout model was designed to evaluate development performance and to produce estimates of aid requirements for a large number of countries under alternative assumptions as to internal policies. A third of the twenty countries examined showed evidence of predominant trade limitations and another third of predominant savings limitations. Their direct application of their model to Pakistan, for example, resulted in the trade gap exceeding the savings gap.[18]

In the same paper, Chenery and Strout cite four countries as instances of successful uses of aid. They write, "the possibilities of securing rapid and sustained development by effective use of foreign assistance have been strikingly demonstrated in the past decade by such countries as Greece, Israel, Taiwan, and the Philippines. In each case, a substantial increase in investment financed largely by foreign loans and grants has led to rapid growth of GNP followed by a steady decline in the dependence on external financing. Not only was growth accelerated by foreign assistance, but the ability of each economy to sustain further development from its own resources was very substantially increased."[19]

There is no evidence that in these countries investment allocation was based on the higher equilibrium exchange rate which is presumed to be appropriate after aid is reduced.[20] In the absence of such evidence one may think that the success of these countries is due to factors other than the one isolated by Chenery and Strout. The central point seems not to be the exchange rate, but rather the composition of investment and the rate of growth of productivity. Productivity increase on the other hand depends very much on improvement in skills and organization to make effective use of the additional capital that becomes available.

A similar example of trade gap pessimism is contained in the Chenery-Adelman study of Greece. The result of their work shows a sharply increasing projected trade gap from 1962 to 1971.[21] This would be a "soft" gap. They seem to recognize this problem when they note that "the combination of the devaluation of the drachma in 1953 and the subsequent relaxation of import controls tended to increase the marginal propensity to import above its normal long-term equilibrium level."[22] Yet they do not seem to let this affect their trade gap projection.

The UNCTAD projections of savings gaps and trade gaps represent another example of trade gap pessimism.[23] Their projections for 1975 indicate that the trade gap will be dominant for more than half of the thirty-seven countries considered in Latin America, Africa and Asia. The UNCTAD report seems to recognize the compressibility of the trade gap, especially in the case of Africa,[24] but they certainly do not emphasize the fact that their trade gap projections typically exceed the minimum consistent requirements.

Most of the models cited include some elements of optimization for a five- or ten-year period, but they do not consider the pattern of capital inflow over a long period to show the welfare implications of alternative strategies of aid and growth.

Whatever the shortcomings of the basic models, the analytical tools offer useful policy recommendations and the avoidance of policies which would be undesirable in the specific cases cited. Because Chenery-Strout model contains parameters that are easily estimated and because it has elements relevant to our study, it is used in a modified form as the basis of our model in Chapter 4.

FOOTNOTES

[1] The two-gap analysis has been set out in several recent papers. But for a very lucid and thorough discussion and for those which have much relevance to our study, consult the following works: H.B. Chenery and M. Bruno, "Development Alternatives in an Open Economy: The Case of Israel," Economic Journal, Vol. 72 (1962), pp. 79-103; H.B. Chenery and A.M. Strout, "Foreign Assistance and Economic Development," American Economic Review, Vol. 55, No. 4, Sept. 1966, pp. 679-733; R.I. McKinnon, "Foreign Exchange Constraints in Economic Development and Efficient Aid Allocation," Economic Journal, Vol. 74 (1964), pp. 388-409; J. Vanek, op. cit.

[2] R.I. McKinnon, op. cit., explains this fully in his model.

[3] For a summary of this discussion see, H.J. Bruton, "The Two Gap Approach to Aid and Development: Comment," American Economic Review, Vol. 59, June 1969, pp. 439-446 ; "A Reply to Bruton" by H.B. Chenery, pp. 446-449.

[4] Chenery and Strout, op. cit., pp. 689-90.

[5] Ibid., p. 726.

[6] For a discussion of some of the assumptions underlying the models, see G.M. Meier, The International Economics of Development, Harper and Row, New York, 1968, pp. 88-94; McKinnon, op. cit., and H.J. Bruton, op. cit.

[7] Examples of short-run limited flexibility models are those of Chenery and Strout and Vanek.

[8] Chenery and Strout, op. cit., pp. 689-90.

[9] Ibid., p. 697.

[10] See particularly H.B. Chenery and A. MacEvan,"Optimal Patterns of Growth and Aid: The Case of Pakistan," in I. Adelman and E. Thorbecke (eds.), The Theory and Design of Economic Development, John Hopkins Press, Baltimore, 1966; Chenery and Strout, op. cit., Chenery and Bruno, op. cit.

[11] This problem was first pointed out by G. Ranis and J.C.H. Fei, "Foreign Assistance and Economic Development: Comment," American Economic Review, Vol. 58, No. 4, Sept. 1968, pp. 897-912; "Reply" by H.B. Chenery and A.M. Strout, pp. 912-916.

[12] J. Vanek, op. cit., Chapter 3.

[13] M.K. Evans himself admits this problem in his study: "An Econometric Model of the Israel Economy 1952 to 1965," op. cit., p. 626.

[14] A full discussion of this issue is found in J. Vanek, op. cit. pp. 114-124.

[15] This material draws heavily on the ideas of R.N. Cooper, Currency Devaluation in Developing Countries, Essays in International Finance, No. 86, Princeton, June 1971.

[16] R.N. Cooper, "An Assessment of Currency Devaluation in Developing Countries," in G. Ranis (ed.), Government and Economic Development, Yale University Press, New Haven, 1971, pp. 472-513.

[17] See for example: I Adelman and H.B. Chenery, "Foreign Aid and Economic Development: The Case of Greece," Review of Economics and Statistics, Vol. 48, No. 1, Feb. 1966, pp. 1-19; J. Bergsman and A.S. Manne, "An Almost Consistent Intertemporal Model for India's Fourth and Fifth Plans," in I. Adelman and E. Thorbecke (eds.), op. cit., pp. 239-256; H.B. Chenery and A.M. Strout; UNCTAD study; and J. Vanek, op. cit.

[18] Chenery and Strout, op. cit., p. 696, Fig. 1.

[19] Ibid., pp. 679-680. This conclusion is documented in more detailed studies of Israel by H.B. Chenery and M. Bruno, op. cit., and Greece by I. Adelman and H.B. Chenery, op. cit.

[20] This was first pointed out by H.J. Bruton, op. cit., p. 444.

[21] H.B. Chenery and I. Adelman, op. cit., p. 12, Fig. 4.

[22] Ibid., p. 8.

[23] UNCTAD study, op. cit., p. 41, Table 20.

[24] Ibid., p. 46.

CHAPTER 3

THE INITIAL CONDITIONS

The General Characteristics of the Ghanaian Economy, 1957-1969

The main purpose of this chapter is to give a brief evaluation of Ghana's recent economic experience as background for a more comprehensive analysis of the solution of the model we shall develop in Chapter 4. That is, to give that model a predictive power to solve the actual economic problems of Ghana, we must try to understand how the economy operated in the past (in line with Keynes's model). Any substantial deviation from "sound" practices in the past has adversely affected the operation of the economy.

We shall apply some of the statistical or historical data of the economy of Ghana in a description of certain aspects of the macro economy which play a central role in our estimation procedure. We focus mainly on the Gross Domestic Product and its distribution by sectors of economic activity, some aspects of development, productivity, welfare and growth. In the second category of variables to be looked into, we find investment, savings, exports and imports.

Since 1957 it has been the object of government policy to radically change the structure of production in Ghana. There has been a marked success in this, if this objective of national economic policy was only to transform the structure of economic activities. The multitude of instruments designed to achieve this objective were remarkably successful.

In a relatively short period and especially after 1960, there was a major shift in the composition of economic activity in the industrial origin of Gross Domestic Product. On the whole there was a shift from traditional agriculture (especially activities such as the production of cocoa and subsistence agriculture) towards "modern" activities in manufacturing, construction and sawmilling. Also this shift in activities, saw the rapid expansion of economic activity by the state relative to private activities. Despite this major transformation there was a failure to achieve significant real growth throughout the period.

The key variable of the national accounts in Ghana is the GDP, estimated from expenditure. The accounts provide a consistent record of the performance of the economy over the years 1957 to 1969. Table I sets out the expenditure at current prices of the Gross National Product for 1956 to 1969. This shows the allocation of resources in monetary terms year by year. To examine flows of real resources from year to year, we have to take account of price changes. Table 2 thus sets out the GNP for the years 1956 to 1969 at constant 1960 prices. This enables us to appreciate some of the trends in relative prices and the absolute figures give a picture of the real growth of the economy.

In absolute terms the GDP rose from ¢740 in 1957 to ¢1793 in 1966; it had a slight fall in 1967 and reached a figure of ¢2,328 in 1969. The compound annual average growth rate of GDP at 1960 prices was 3.5 percent for the thirteen-year period. The growth rate for 1957-61 was 5.4 percent; it was 2.4 percent for 1962-66 and 2.3 percent for 1967-69. The distribution of parameter values during 1957 and 1969 are shown on Table 3. The potential growth rate of GDP for the same period which is a kind of smoothing of actual growth rates is estimated to be 4.3 percent

TABLE 1

EXPENDITURE ON THE GROSS NATIONAL PRODUCT, 1956-1969

(AT CURRENT MARKET PRICES)
(¢ MILLION)

	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
1. Private Consumption Expenditure	540	596	572	650	694	804	830	916	987	1,255	1,337	1,286	1,463	1,626
2. General Government Consumption Expenditure	60	66	70	78	96	110	122	138	160	205	261	308	363	412
3. Gross Domestic Fixed Capital Formation	112	112	110	154	194	210	184	218	232	271	246	213	224	242
4. Changes in Stocks	+10	-12	-2	+20	+22	-20	-12	-8	+14	+1	+15	+6	+2	+17
5. Exports of Goods and Non-Factor Services	182	192	220	240	246	244	240	234	247	252	219	265	369	425
6. Imports of Goods and Non-Factor Services	-198	-214	-190	-252	-296	-326	-270	-290	-283	-376	-285	-300	-354	-394
Expenditure on Gross Domestic Product	706	740	780	890	956	1,022	1,094	1,208	1,357	1,608	1,793	1,778	2,067	3,238
7. Net Factor Income Payment from the Rest of the World	-4	-6	-4	-6	-10	-14	-10	-18	-12	-19	-14	-21	-39	-43
Expenditure on Gross National Product	702	734	776	884	946	1,008	1,084	1,190	1,345	1,589	1,779	1,757	2,028	2,285

Source: C.B.S., Economic Survey, 1967, 1969.

TABLE 2

EXPENDITURE ON THE GROSS NATIONAL PRODUCT, 1956-1969

(AT CONSTANT PRICES OF 1960)
(¢ MILLION)

	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
1. Private Consumption Expenditure	568	618	593	656	694	752	710	744	717	722	689	724	757	797
2. General Government Consumption Expenditure	70	75	77	84	96	104	114	126	134	165	172	193	213	226
3. Gross Domestic Fixed Capital Formation	130	125	122	164	194	200	182	216	221	250	207	154	142	147
4. Changes in Stocks of Inventories	+10	-12	-2	+20	+22	-20	-10	-8	+26	-9	+16	+7	-	+11
5. Exports of Goods and Non-factor Services	194	215	178	218	246	276	324	308	271	334	306	288	288	277
6. Imports of Goods and Non-factor Services	-205	219	-196	-253	-296	-322	-282	-312	-272	-350	-277	-233	-251	-268
Gross Domestic Product	767	802	772	889	956	990	1,038	1,074	1,097	1,112	1,113	1,133	1,149	1,190
7. Net Factor Income from Abroad	-4	-6	-4	-10	-10	-14	-10	-18	-12	-19	-14	-17	-29	-32
Gross National Product	763	796	768	879	946	976	1,028	1,056	1,085	1,093	1,099	1,116	1,120	1,158

Source: U.N., Yearbook of National Accounts Statistics 1968, Vol. 1, New York, 1969, p. 256 for 1959 to 1966; T.M. Brown, "Macroeconomic Data of Ghana," U.W.O., London, Mimeo; February 1972, Table C-2, for 1957-58 and 1967-69.

(5.8 percent for 1957-61; 2.8 percent for 1962-66; 4.3 percent for 1967-69). The potential growth rate represents the growth rate that should have been achieved, given the savings, investment, and growth of labour that occurred plus an attainable rate of profit and technical progress. Actual growth rates fell below the potential rate because of various kinds of inefficiencies that occurred as will be revealed later.

The welfare series are represented by the private consumption and national consumption per head. The national consumption per capital at constant prices, 1957=100 was 104.3 in 1960, 120.8 in 1961 and only 98.1 in 1969. The series give a very limited view of the real situation, for they show nothing about the income distribution, and other matters which are important to economic well-being. The data suggest that while growth and welfare had favourable trends up to 1961, the situation deteriorated thereafter. The downward trend appears to have ended in 1966, and a slow climb back upward began in 1967, though not yet recovered to those levels prevailing in 1957.

To show the relative importance of the different components of the expenditure on the GDP, we express the data of Table 1 as percentages of the total of each year. The results are presented in Table 4. It shows the allocation of the resources of the economy, over the thirteen years, to the different categories of final use.

The share of private consumption declined from the 1957 level with lower peaks in 1961 and 1965 and a lower level plateau between 1959 and 1961, 1961 and 1965 and between 1965 and 1969. Government consumption expenditure, on the other hand, shows an upward trend from 9 percent in 1957 to 18 percent in 1969. The pattern reflects an increasing role the

TABLE 3

PARAMETER VALUES: RELATIONSHIPS DURING

1957 - 1969

PARAMETER	SYMBOL	VALUE
1) Compound annual average growth rate of GDP (constant 1960 prices)	-	3.52
2) Potential growth rate of GDP	-	4.28
3) Compound annual average growth rate of GNP (constant 1960 prices)	r	3.33
4) Potential growth rate of GNP	-	4.05
5) Incremental gross capital-output ratio (assuming 1 year lag)	$k=I/\Delta V$	4.46
6) Ratio of gross investment to GNP in 1957	Io/Vo	13.60
7) Ratio of actual gross national saving to GNP in 1957	α_o	10.6
8) Marginal potential savings ratio	α'	.14
9) Ratio of imports of goods and services to GNP in 1957	μ_o	.29
10) Marginal potential import ratio	μ'	.14
11) Compound annual average growth rate of exports	ε	3.56

Source: Calculated from the data provided in this paper.

TABLE 4

COMPONENTS OF THE EXPENDITURE ON THE GROSS DOMESTIC PRODUCT, 1957-1969

(AT CURRENT MARKET PRICES)

Percentages

	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
1. Private consumption expenditure	80.5	73.3	73.0	72.6	78.7	75.9	75.8	72.7	78.0	74.6	72.3	70.8	69.8
2. General government consumption expenditure	8.9	9.0	8.8	10.0	10.8	11.2	11.5	11.8	12.8	14.6	17.3	17.7	17.7
3. Gross domestic fixed capital formation	15.2	14.2	17.3	20.3	20.5	16.8	18.0	17.1	16.9	13.7	12.0	10.8	10.4
4. Changes in stock of inventories	-1.6	-0.3	+2.2	+2.3	-2.0	-1.1	-0.7	+1.0	+0.1	+0.8	+0.3	+0.1	+0.7
5. Exports of goods and non-factor services	25.9	28.2	27.0	25.7	23.9	21.9	19.4	18.2	15.8	12.2	14.9	17.9	18.3
6. Imports of goods and non-factor services	-28.9	-24.4	-28.3	-30.9	-31.9	-24.7	-24.0	-20.8	-23.4	-15.9	-16.8	-17.1	-16.9
Total expenditure on Gross Domestic Product	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Calculated from Table 1.

state has assumed in the social and economic development of the country. It is an indication of "socialization" in consumption.

Another important element of the expenditure on the GDP is gross domestic fixed capital formation. The Ghanaian economy during 1957 to 1961 was growth-oriented, with a considerable proportion of the GDP allocated to the accumulation of capital. This reflects, to a great extent the attempts by the government to speed up economic development by making large capital investments in various ventures which were not directly productive. Two periods can be distinguished. The share of capital formation was about 15 percent of the total expenditure in 1957. It reached a significantly high level of 21 percent in 1961 and dropped to a level of 10 percent in 1969. The incremental gross capital-output ratio for 1957-69 was 4.46 percent.

The two elements of external trade, exports and imports show a great importance in the national accounts. The share of exports of goods and non-factor services during the observation period was between 12 percent and 28 percent. This shows a wide fluctuation in the thirteen-year period. The compound annual average growth rate of exports for the period was 3.59 percent. Imports fluctuated between 16 percent and 32 percent of the Gross Domestic Product. The average import ratio at the end of 1969 was .23 while the marginal potential import ratio for 1957 to 1969 was .14.

In the case of imports into Ghana three periods could be distinguished: pre-restriction period (1957-1961); import control regime (1962-1966); and the liberalization period of the National Liberation Council (1967-1969).

Table 1 shows that there were current account deficits in four out of the five years, 1957 to 1961, with a deficit of record size in 1961.

This result was an account of a sharp rise in imports and consequently a rapid deterioration in the balance of payments.[2] The government became increasingly alarmed by this situation and for this reason introduced quantitative controls on imports. The objectives were to bring a balance in the external trade of Ghana and to regulate the flow of imports into the country with a view to exclude the importation of non-essentials.

Other things being equal, the deterioration of the balance of payments would have been even more rapid without the controls, for they did undoubtedly result in some reduction in the total import bill. Prior to the application of controls in 1962 imports were on a steeply rising trend, but for the rest of the period (1962-1969) imports were kept below the 1961 level. Table 2 reveals that in real terms, the reduction was significantly greater. The government, however, was unable to fully achieve the balance of payments objectives and imports began to rise in 1969. What actually happened during the restrictive period was a shift in the geographical origin of Ghana's imports in favour of the socialist countries (see Table A1 at the Statistical Appendix).

An index of Ghana's dependence on foreign trade, that is, the foreign trade ratio,[3] can be computed. This ratio for Ghana was 43 percent in 1957 and shows a remarkable constancy (42-43 percent) up to 1961, before declining to 37 percent in 1962. It continued to fall to 29.9 percent in 1968 and began to pick up slightly (30.1 percent) in 1969.

The other link in the economic chain relates to the trends in prices. Table 5 shows implicit indices for some components of the expenditure of the Gross Domestic Product. This presentation reveals some of the basic economic pressures acting on the economy during the period. Such pressures include the world market conditions, and internal

TABLE 5

IMPLICIT INDICES OF PRICES FOR COMPONENTS OF EXPENDITURES

ON THE GROSS DOMESTIC PRODUCT, 1957 - 1969

(1960 = 100)

Items	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Private consumptions expenditure	96	96	99	100	107	117	123	138	174	193	178	193	204
General government consumptions expenditure	88	91	93	100	106	107	110	119	124	152	160	170	182
Gross domestic fixed capital formations	90	90	94	100	105	101	101	105	108	119	138	158	164
Exports of goods and non factor services	89	124	110	100	88	74	76	91	75	72	92	128	153
Imports of goods and non factor services	98	97	100	100	101	96	93	104	107	103	129	141	147
Gross domestic expenditure or product	92	101	100	100	103	105	112	124	145	161	157	180	196

Source: T.M. Brown, op. cit., Table C-3.

policies concerning prices and incomes. The table depicts that Ghana had increases in the prices of all items of the GDP between 1957 and 1969. There were, however, sharp increases in the prices of private and government consumption of goods and services, and to a lesser extent, those of capital formation than imports and exports. The general pattern seems to be one of increasing local pressure on resources, that is, a high rate of increase of prices of purely domestic goods and services embodied in those elements of expenditure.

Except 1958, 1968 and 1969, the value of imports (c.i.f.) exceeded the value of exports (f.o.b.) as shown in Table 6. This is explained by an increase in the real price of imports. At the same time while the real volume of exports increased there was a downward trend in export prices. Such a collapse in export prices seems to have been recovered in 1969, but here the outcome may be explained by the sudden jump in the price of cocoa. The downward trend of export prices meant a stress in the economy which was alleviated by a substantial increase in imports in the face of a sharp deterioration in the terms of trade as seen from column seven in Table 6. With 1960 as base, the import price index rose from 98 in 1957 to 101 in 1961, thereafter it fell for two years and began to pick up in 1964 rising gradually to 141 in 1968 and 147 in 1969. For the same period, the export price index increased from 89 in 1957 to 124 in 1958; then fell for the subsequent years. It had a peak of 91 in 1964 and increased sharply from 128 in 1968 to 153 in 1969. Consequently, there was a considerable deterioration in the terms of trade as the ratio of export prices to import prices fell from the 1958 level of 128 to a low level of 91 in 1968. There was a rise to 104 in 1969.

TABLE 6

SUMMARY OF PRICE, VOLUME, VALUE INDICES, AND TERMS OF TRADE OF GHANA

1957 - 1969

(1960 = 100)

Year	Exports from Ghana			Imports into Ghana			Terms of Trade
	Value (f.o.b.) ¢ millions (1)	Volume (2)	Price (3)	Value (c.i.f.) ¢ millions (4)	Volume (5)	Price (6)	(7)
1957	192	85	89	214	73	98	91
1958	220	70	124	190	65	97	128
1959	240	85	110	252	87	100	110
1960	246	100	100	296	100	100	-
1961	244	125	88	326	108	101	87
1962	240	131	74	270	90	96	77
1963	234	123	76	290	102	93	82
1964	247	125	91	283	96	104	88
1965	252	153	75	376	116	107	70
1966	219	127	72	285	103	103	70
1967	265	116	92	300	97	129	71
1968	369	-	128	354	-	141	91
1969	425	-	153	394	-	147	104

Sources: Cols (1) and (2) same as in Table 2.
Cols (2) and (5) own calculation.
Cols (3) and (6) computed by T.M. Brown, op. cit.

The performance of the economy in terms of real output as shown in Table 2, can be presented as an account which sets the supply of resources during the period against the uses to which these resources were put. This is given in Table 7 and it indicates the aggregate movements in the economy in the period under review. The table sums up the flows of goods and services which were available to the economy over the period from domestic production and from abroad, and indicates the way in which they were spent on private and government consumptions, gross domestic fixed capital formation, accumulation of stocks and exports of goods and non-factor services. By definition the supply of resources equals the uses of those resources.

Imports are treated as an injection into the economy and exports as a leakage in the economic system. Imports in real terms were ¢3,531 (or 21.0 percent) and exports were ¢3,529 (or 20.9 percent). The wide annual fluctuations in prices of both imports and exports smooths out over the period. Private consumption expenditure and capital formation show a privilege position in the use of resources.

We now turn to review the patterns of domestic savings in Ghana in the observation period. The government of Ghana has generally employed an array of policy prescriptions intended directly to raise the levels of domestic savings. These devices have invariably included the establishment of new institutions (banking institutions, insurance companies, etc.) and instrumentalities to encourage private saving, and the use of general taxations to increase or maintain public sector saving. These measures have on the contrary not been sufficient in themselves.

To show this, we turn to the discussion of the macro economics

TABLE 7

AGGREGATE MOVEMENTS IN THE GHANAIAN ECONOMY, 1957-1969

AT CONSTANT 1969 PRICES

SUPPLY OF RESOURCES	¢million	per cent	USES OF RESOURCES	¢million	per cent
1. Gross Domestic Product	13,315	79.0	1. Private Consumption Expenditure	9,173	54.5
2. Imports of Goods and Non-factor Services	3,531	21.0	2. General Government Consumption Expenditure	1,779	10.6
			3. Gross Domestic Fixed Capital Formation	2,324	13.8
			4. Changes in Stock	+14	0.2
			5. Exports of Goods and Non-factor Services	3,529	20.9
Total Resources	16,846	100.0	Total Uses of Resources	16,846	100.0

Source: Calculated from Table 2.

of distortions and growth of national domestic saving in Ghana.[4] There was generally the failure to tap the domestic savings potential. The difficulties were due to an inefficient segmentation of the local organized capital market on both the savings and investment sides and the consequent low rates of return generally available to savers, and the limited degree of financial intermediation. The segmentation and misallocation increased over the course of the sample period.

We make a quick survey of the instruments provided for savers in Ghana. These financial institutions include the Bank of Ghana and a number of financial intermediaries. Let us consider each in turn. The Bank of Ghana was established as the central bank of the country in 1957. Among its important functions are dealings in credit operations with the public. The percentage of total net domestic credit held by the bank in 1962 was 13. The figure increased to 55 in 1968 and fell to 51 in 1969. The bank has also been a major source of funds for the central government. The government has used this credit in financing budget deficits and still a greater proportion of the funds to promote a variety of government financial corporations. The loans given to these public enterprises from 1961 to 1969 are given below:

Central Government Loans to Public Enterprises
1961-1969
(¢ thousands)

1961	1962	1963	1964	1965	1966	1967	1968	1969
2,968	95	-	-	26	580	333	1,332	-

Source: C.B.S., Economic Survey 1969, Accra, 1970, Table 7, p. 113.

There are a number of such corporations. The National Investment Bank (NIB), a joint state-private institution, was established in 1963

"to mobilize internal capital and external funds" and "to promote, finance and assist enterprises in all sectors of the national economy."[5] The bank has other functions to perform such as engaging in guarantees. About 70 percent of its capital is paid up by the government and the rest is contributed as shares by foreign private institutions, thus providing an institution for saving and investment.

Under various names, the Agricultural Development Bank (ADB) has been operating since 1965. Its major function is the provision of credit to agriculture. The Bank's paid up capital by the government in 1970 was ¢10,554 thousand. Request for the Bank's loan facilities has been increasing faster than the Bank's available resources. To be able to satisfy all these demands require a large stock of capital funds. One source of such funds is savings from the general public. The Bank has therefore accepted deposit accounts in recent years. At the end of 1970 these deposits amounted to ¢368 thousand, which was 3.5 percent of that year's paid up capital.

By far the most important government financial corporation is the Ghana Commercial Bank. It was established in 1953 "as a national financial institution to promote the economic growth of the country by financing agriculture and industry as well as assisting Ghanaian traders and businessmen to participate more effectively in the country's business."[6] The bank has made steady progress over the years and now it is the largest commercial bank in Ghana, in terms of volume of deposits. It held 75 percent of total commercial bank assets in mid 1970. The bank has met the original objective of setting the pace for the expatriate commercial banks and has shown the way in expansion of branches; its branch offices numbered more than 90 in 1969.

The two expatriate commercial banks have a long history in the country. They are the Standard Bank of West Africa Limited (SBWA), established in 1897 and Barclay's Bank D.C.O., established in 1917. Since January 1971, they have been incorporated in Ghana as new banks. These banks have been financing mostly the large traders and cocoa exports. Savings with the banking institutions did not increase appreciably over the period as a result of low interest rates on deposits and other inefficiencies. (We provide a further discussion on these aspects in Chapter 5). Savings with some of the financial institutions from 1957 to 1969 is shown in Table 8. Savings increased about seven times in 1969 over the low level of 1957.

The next bank of importance is the Ghana Savings Bank. It is designed to serve as the medium for the collection of savings from the lower income group throughout the country. While it has succeeded in doing that, its deposit rates in line with the commercial banks have been low. The deposit interest rate was 2.5 percent for most of the time and has since July 1, 1971 been raised to 5 percent. Although savings banks are not large in terms of deposits, this move did represent an important break with the past neglect of incentive to save. The value of savings has hardly exceeded ¢10 million. From a deposit of exactly ¢10 million in 1957 it fell to a low level of ¢8.4 million in 1963, and has recovered to ¢9.0 at the end of 1969 (see Table 8).

A major segment of the organized mortgage market is a small government sponsored intermediary, the First Ghana Building Society established in 1956. It accepts deposits with limited withdrawal privileges at interest rates in 1971 varying from 5 percent to 6 percent, and for 1957 to 1970 varying between 4.5 percent and 5 percent. Its deposits ran from a little over

TABLE 8

SAVING WITH FINANCIAL INSTITUTIONS

IN GHANA, 1957-1969

(MILLIONS OF CURRENT ¢)

End of Year	Banking Institutions*	Ghana Savings Bank	Building Society	Total Savings Money
1957	13.5	10.0	0.6	24.1
1958	17.7	10.2	0.9	28.8
1959	22.4	9.8	1.6	33.8
1960	25.7	10.0	1.8	37.5
1961	26.6	9.3	1.9	37.8
1962	34.5	8.7	2.0	45.2
1963	42.4	8.4	2.1	52.9
1964	53.8	8.6	2.3	64.7
1965	60.1	8.7	2.4	71.2
1966	67.2	8.7	2.6	78.2
1967	78.1	8.7	2.7	89.5
1968	93.2	8.7	2.8	104.8
1969	98.9	9.0	2.9	110.8

Sources: T.M. Brown, op. cit., Table H-3 for 1957 through 1960; C.B.S., Economic Survey 1967 for 1961 through 1967; and 1969 issue for 1968 and 1969.

* This consists of time and savings deposits.

half a million cedis in 1957 to ¢2.9 million at the end of 1969.

There exists a number of insurance companies which include the State Insurance Corporation, the Guardian Assurance Company and the Northern Assurance Company. The State Insurance Corporation established in 1962 offers various kinds of life, personal accident and liability insurance. "By encouraging small savings, particularly in life insurance, the Corporation accumulates large funds which it invests in various projects in the country,"[7] such as government securities and large-scale housing projects.

The last aspect of the financial intermediation in Ghana is the Social Security Fund which came into operation at the end of 1965, a fund into which contributions by workers and employers are kept by the State Insurance Corporation on behalf of the beneficiaries. It has an impact on the money supply. It is a source from which money can flow back into the system when sums are paid to individuals. The Fund's accounts stand roughly at ¢60 million. Large amounts of capital have been made directly available to the government. It is a potential source of money for any future government.

Furthermore, there is an unorganized market in Ghana and as in many developing countries, it has been a thriving segment of the capital market. Very little is known about this market and how much money is saved in this way. There are no data to indicate the approximate magnitudes involved. In this market is the "village money lender" who typically works from his saving and operates in that part of the financial market abandonned by the organized and regulated sector. He makes short term loans for consumption and investment purposes and charge seemingly

astronomical rates which cover the cost of capital and a high risk premium.

Ghanaians also save in foreign markets. Despite exchange control prohibitions of capital transfers for such purposes, various devices are available to the interested persons, ranging from simply purchasing foreign exchange on the black market or through more sophisticated devices such as over-invoicing on imports or under-invoicing of exports. The Ghanaian saver can in the long run expect to obtain both the higher rate of return offered on savings abroad and the possibility of a profit on the exchange transaction. Besides, there is the possibility of capital flight for precautionary purposes.

The above review shows the various segments of the capital market in Ghana before 1957 and how new segments came into the scene in the 1960s.

This survey suggests a dismal performance of the Ghanaian economy in the observation period. Major issues still remain. It is necessary to discuss some important macro and micro elements underlying the four major components that enter into our estimation procedure - savings, investment, exports and imports. We shall turn to this set of issues in Chapter 5.

FOOTNOTES

[1] For some of growth concepts and formulas see, T.M. Brown, Canadian Economic Growth, Queen's Printer, Ottawa, 1965, Chapter 3. See also his Specification and Uses of Econometric Models, Macmillan, London, 1970.

[2] Tony Killick, "Ghana's Balance of Payments since 1950;" Economic Bulletin of Ghana, Vol. 5, No. 2, 1962.

[3] For an explanation of a computation of foreign trade ratio see, S. Kuznets, Six Lectures on Economic Growth, Glencoe, 1956, Lecture 5.

[4] We follow J. Clark Leith, Exchange Control, Liberalization and Economic Development, preliminary mimeo, U.W.O., London, 1971-72. I am most grateful to him for allowing me to see a preliminary draft of the manuscript he is preparing.

[5] Daily Graphic, Accra, Wednesday, May 7, 1969, p. 8.

[6] Ghana Economic Review 1970, Editorial and Publishing Services, Accra, p. 138.

[7] Ghana Economic Review 1970, op. cit., p. 152.

CHAPTER 4

THE ANALYTICAL FRAMEWORK

Modified Chenery-Strout Model[1]

We shall be concerned in our model, with the problem of determining an optimum pattern of aid and growth over time. We consider first the case in which only the saving-investment gap is dominant (i.e., larger than the trade gap). Then we take up the possibility of accelerating growth when the trade gap is dominant (i.e., larger than the saving-investment gap). Our model includes the two potential gaps. The constraints are the policy goals and the definitional, structural, and behavioural relations for each time period.

The variables in the basic model are as follows (where the subscript t, indicates the year):

V_t Gross National Product

I_t Gross investment[2]

S_t Gross domestic savings

$\bar{S}_t$ Potential gross domestic savings

M_t Imports of goods and services

$\bar{M}_t$ Required imports of goods and services

E_t Exports of goods and services

F_t Net inflow of foreign capital

C_t Consumption

The parameters[3] used in the structural equations of the model are as follows:

$\bar{r}$ Target growth rate of GNP

α_t Average savings rate in year t (S_t/V_t)

α' Marginal potential savings rate $(\Delta\bar{s}/\Delta v)$[4]

k Incremental capital-output ratio $(I/\Delta v)$[5]

μ_t Average import rate in year t (M_t/V_t)

μ' Marginal potential growth rate $(\Delta\bar{M}/\Delta V)$[6]

ε Rate of growth of exports

We assume in this chapter that all these parameters are known.

The model contains two definitions of Gross National Product. These identities contain only actual (ex post) values. We get one of the identities from the expenditure side:

(1) $V_t \equiv C_t + S_t$ (formal accounting identity),

which shows the disposition of income between consumption and savings. C_t is a summation of government and private consumption expenditures, with the expenditure of the former being a significant factor in Ghana as well as in most developing countries. The second identity comes from the production side

$$(2)\quad V_t \equiv V_o + \frac{1}{k}\sum_{t=o}^{t-1} I_t$$

This identity represents the standard Harrod-Domar assumption that a specified amount of investment (with a constant marginal capital-output ratio) is needed to increase output. This relationship is simply definitional; I_t is the capital actually utilized. A rigid relationship between annual increments of capital actually utilized and annual increments in output is not valid for Ghana and many African countries. We still make use of this formulation for reasons given below.

Net foreign capital inflow equals the difference between actual

(ex post) investment and savings:

$$(3)\quad F_t = I_t - S_t$$

and also the difference between (ex post) imports and exports

$$(4)\quad F_t = M_t - E_t$$

Taking equations (3) and (4) together, we see that the difference between actual investment and actual savings equals the difference between actual imports and exports (in ex post sense).

From the latter two equations we know that foreign capital inflow plays two crucial roles in the development efforts of less developed countries: one as a supplement to domestic savings in financing investment

$$(5)\quad I_t = S_t + F_t$$

and the other as a supplement to exports in financing imports

$$(6)\quad M_t = E_t + F_t$$

We assume a target growth rate $\bar{r}$, of 5 percent for the projection period. This sums up the principal goal of development in a given rate of increase in GNP. In making this choice we assume that foreign capital inflow is available and that there will be sufficient capital to make this goal realizable. We therefore assume that

$$(7)\quad V_t = (1 + F)\, V_t - 1$$

We then calculate the amount of actual investment[7] needed in year t to achieve this target rate of growth of national income:

$$(8)\quad \bar{I}_t = k\,(V_{t+1} - V_t)$$

where $k\ (= {}^{I}/_{\Delta v})$, the marginal or incremental capital-output ratio[8] is the ratio of the value of net investment in this period (using current prices) to the value of the change in output in this period (also using current prices). The ratio of the total stock of capital in existence to the flow of total output in a given period of time, on the other hand,

gives us the average capital-output ratio. The incremental capital-output ratio (ICOR) may, of course, be quite different from the average ratio (ACOR).

The ICOR is employed here to determine the level of net investment required to achieve a targeted rate of growth of income. Empirical results of Leibenstein's study suggest that the lower the ICOR, the more rapid the rate of growth that is achievable with a given level of investment. ICOR's are very much higher for countries with low growth rates than for those with high growth rates. The use of ICOR in this fashion was originated by Harrod-Domar as a tool with which to examine short-run stability and growth problems in advanced economies.

For our purposes, it is the ICOR which is required rather than the average (ACOR). Estimating depreciation allowances in a developing country involves a lot of conceptual difficulties and statistical pitfalls.

Measurement is not the only difficulty. There is a problem in the interpretation of ICOR if changes in output are significantly affected by forces other than changes in the stock of physical capital. Any computation of ICOR for a developing country is likely to vary widely and this may be due to several factors. First, we do not know whether all other productive factors that must co-operate with capital are also assumed to increase when capital increases. In an advanced economy an adequate supply of co-operant factors is likely to exist. The institutional, political and social prerequisites for development also already exist. But in a developing country where the co-operant factors tend to be in short supply, and the other prerequisites for development may not yet exist, it is not legitimate to consider an increase in capital as a sufficient

condition for an expansion in output. Greater output may require changes in other factors along with an increase in capital. To ignore these other variables as the mobility and skill of labour supply, entrepreneurship, availability of new technical knowledge, institutional arrangements and attitudes, is to take a too mechanical view of the changes that are necessary for an increase in output.

The use of the ICOR therefore places misleading emphasis on "capital requirement". If, for instance, unutilized capacity exists, it is possible to raise output with the fuller utilization of this existing capital stock or without requiring much additional capital. There may even be considerable opportunity to raise output by applying efficient methods of production to existing plants. Furthermore, the overall ICOR will not be fixed, since sectoral output may vary with changes in demand. The use of ICOR for these reasons, tends to cloud rather than reveal the strategic factors of development. Its predictability, in this sense, is weak.

Despite these objections, the ICOR is widely calculated and widely used as an overall device for projecting investment. The very purpose of theory is to simplify reality. In making use of ICOR we sacrifice what appears plausible but a complicated matter for simplicity and for reasons of data availability. In the short run, the ICOR is markedly variable. But over longer periods of time, averaging the annual marginal rates will appear to produce meaningful overall results. We must, however, make the reservation that there is likely to be some discrepancy between the actual ratio and the projected ratio over the period for which investment requirements are calculated.

The potential savings available in that year to finance this investment equals

$$(9)\ \bar{S}_t = \bar{S}_0 + \alpha' (V_t - V_0)$$

This shows that the potential savings in year t, is a function of potential base year savings and the increase of income since the base year.[9]

The marginal savings rate can be viewed as partially a behavioural constraint and partially an instrument of policy. Thus, the savings limit shown in equation (9) includes not only the marginal propensity to save. Within certain limits the government could also constitute policies (for example, tax policies) which would affect α'. However, within the model presented here the marginal potential savings rate is taken as given and is assumed to be equal to the actual savings rate. Actual savings cannot exceed the potential amount shown in equation (9):

$$(10)\ S_t \leq \bar{S}_t = \bar{S}_0 + \alpha' (V_t - V_0)$$

The <u>savings gap</u> in year t (SG_t) corresponding to the assumed target growth rate $\bar{r}$, is therefore defined as the difference between required investment and potential savings. (This is a "<u>hard</u>" or incompressible gap):

$$(11)\ SG_t = \bar{I}_t - \bar{S}_t$$

This is an ex ante savings gap. It differs from the actual (ex post) gap represented by equation (3). Substituting the values of $\bar{I}_t$ and $\bar{S}_t$ from equations (8) and (9) into equation (11), we can deduce the time path of needed foreign aid in the "savings-limited growth" phase:

$$(12)\ SG_t = k (V_{t-1} - V_t) - S_0 + \alpha' (V_t - V_0)$$

This equation shows that the increment is external capital ($SG_t = F_t - F_0$) finances the difference between the increment in investment and the increment in saving.

The trade limit can be incorporated into our model in a form analogous to the saving-investment limit. We postulate that a minimum essential or "traditional" imports (machinery and equipment, raw material imports, spare parts, etc.) are needed to achieve the target rate of growth in year t.

$$(13)\quad \bar{M}_t = \bar{M}_0 + \mu'(V_t - V_0)$$

This import requirement arises from the lack of domestic supply and their necessity in production. Actual imports can, however, exceed these required imports:

$$(14)\quad M_t \geq \bar{M}_t = \bar{M}_0 + \mu' (V_t - V_0)$$

The marginal potential import rate (μ') is probably more amenable to policy control in the long run than the marginal savings or capital-output ratios. It can be affected by policy decisions, but within the present model it is taken as a technical parameter.

Exports are assumed to change (which may be negative) at a constant annual rate:

$$(15)\quad E_t = (1 + \varepsilon)\, E_{t-1} = (1 + \varepsilon)^t E_0$$

where the effects of government policies to increase exports and other exogenously determined factors are summarized by the parameter ε.

Here also, the <u>trade gap</u> in year t (TG_t) corresponding to the assumed target growth rate $\bar{r}$, is defined as the difference between required imports and projected (or potential) exports. (This is also a "<u>hard</u>" gap):

$$(16)\quad TG_t = \bar{M}_t - E_t$$

This is ex ante trade gap. It differs from the actual (ex post) gap represented by equation (4). The trade gap estimate therefore represents the amount of new foreign capital inflow needed to supplement export earnings in order to finance the required imports. Substituting equations

(13) and (15) in (16) the trade gap becomes

$$(17)\quad TG_t = \bar{M}_0 + \mu' (V_t - V_0) - (1 + \varepsilon)^t E_0$$

We have two different estimates of the amount of net foreign capital inflow which is needed to achieve our target growth rate: the savings gap and the trade gap. The gaps must always coincide ex post. If these gaps are also equal in an ex ante sense then both equations (10) and (14) are identities: where $S_t \equiv \bar{S}_t$ and $M_t \equiv \bar{M}_t$ and there is no adjustment necessary. But these gaps need not necessarily be identically equal (and this is maintained in our model) in an ex ante situation, that is, $SG_t - TG_t \neq 0$. The net foreign capital inflow is normally equal to the larger of the two gaps:

$$(18)\quad F_t = \max \{\bar{I}_t - \bar{S}_t, \bar{M}_t - E_t\}$$

If the savings gap is dominant (larger than the trade gap) then (10) is an equality ($S_t = \bar{S}_t$) and (14) is an inequality ($M_t > \bar{M}_t$). The difference between actual imports and required imports consists of inessential imports. In other words all the foreign capital inflow is needed to supplement domestic savings in financing investment. Only part of this inflow will be needed to finance essential imports. The two gaps can therefore be equated by having imports (part of which are inessential goods) in excess of the specified minimum or exports less than the assumed maximum of equation (15).

On the other hand, if the trade gap is dominant (larger than the savings gap) then (14) is an equality ($M_t = \bar{M}_t$) and (10) is an inequality $S_t < \bar{S}_t$. The difference between potential and actual savings represent a loss of potential savings to increase consumption. In other words, all the foreign capital inflow is needed to supplement export earnings in financing essential imports and there are no inessential imports. Here

domestic savings will either fall below the saving potential specified by equation (10) or less productive investment will take place. In this situation the saving constraint ceases to be binding. The basic solution of the model for Ghana is provided in Chapter 5.

This mathematical approach to the analysis of the economic problems in Ghana has helped us to state the specifications of the model in as precise a form as possible. Furthermore, the compact notation of the model facilitates comparison with other two-gap models, as a result of which we may discover differences and similarities between their structures and conclusions and that provided here. The modified model therefore enhances and extends our analytical facilities and as such is an instrument of discovery.

FOOTNOTES

[1] We shall generally follow in our exposition the framework and notations used in Chenery and Strout, op. cit. Our projection model is a simplified version of C-S three-stages growth thesis. C-S assume that countries move through three phases of life cycle. The modified model here is rather concerned with a segment in actual, historical time (1957-69). We use the parameters that describe the structural relationships at this period to make projections into the future.

[2] Gross investment is a sum of gross domestic fixed capital formation and changes in stocks of inventories.

[3] Chenery and Strout included β, the maximum rate of growth of investment, in their model. This parameter is left out in this study since we estimate the required investment in a different manner.

[4] This is not necessarily the same as the actual marginal savings rate ($\Delta S/\Delta V$).

[5] This is how F. Harrod defines k in his growth model. k ($= I/\Delta V$) is the ratio of the value of net investment in this period (using current prices) to the value of the change in output in this period (also using current prices). We should note that the investment is in a net sense and not a valuation of the existing capital stock.

[6] This is not necessarily the same as the actual marginal propensity to import ($\Delta M/\Delta V$).

[7] Chenery and Strout, op. cit., (p. 685) define the ability to invest as $I_t \leq (1 + \beta) I_t - 1$. Their definition refers to the absorptive capacity for additional investment, while we define the required investment that must be undertaken in each year.

[8] See the excellent discussion on ICOR in G.M. Meier, op. cit., pp. 176-9; C.P. Kindleberger, Economic Development, second ed., McGraw-Hill, Japan, 1965, pp. 87-92; H. Leibenstein, "Incremental Capital-Output Ratio and Growth Rates in the Short Run," Rev. Econ. Stat., Vol. 48, No. 1, Feb. 1966, pp. 20-27.

[9] Chenery and Strout, op. cit., (p. 685) define potential savings in a slightly different manner:

$$\bar{S}_t = S_0 + \alpha' (V_t - V_0).$$

Their definition is the same as the one used here if $S_0 = \bar{S}_0$, which is what they assume for Pakistan in 1956 and 1962 (p. 694, footnote, c).

An alternative specification of the savings function is found

in J.C.H. Fei and D.S. Paauw, "Foreign Assistance and Self-Help: A Reappraisal of Development Finance," Rev. Econ. Stat., August 1965, Vol. 67, pp. 251-67. They assume that per capita saving is a constant fraction of the increment in per capita income.

CHAPTER 5

APPLICATION OF THE MODIFIED CHENERY-STROUT MODEL TO GHANA

The Savings Function

Among the factors determining the rate of growth of an economy is the accumulation of capital and thus the capacity to invest in productive activities. For this reason, we begin with a consideration of the generation of that capital, that is, saving. Saving is here considered as the difference between income and consumption. The foreign aid (F_t) received by Ghana should supplement domestic savings. Much emphasis has been placed on foreign aid, and much less on domestic savings, although the latter constitute the mainstay of development efforts in the country.

The first distinction which must be made, and incorporated into the savings function is that between gross and net savings. Although historical data on depreciation of capital or capital consumption allowances do exist in Ghana, we make use of gross rather than net savings because such a definition fits the available data in Ghana better than valuation on a net basis. The concept of savings we are using here pertains to domestic rather than national savings.

The savings function we adopt for Ghana is relatively simple. The actual gross domestic savings (S) is taken to be the sum of household savings (S_h), business savings (S_b) and government or public savings (S_g):

$S = S_h + S_b + S_g$

Direct information on savings of households in Ghana is generally inadequate. This has been so because a large sector of the economy is not monetized and savings done by individuals outside the financial institutions, for example, that of the "village money lender", have been difficult to assess. At this level of our economic analysis, however, we have to be content with whatever data are offered and use them in estimating the corresponding savings function.

The marginal potential savings rate of households in Ghana has been dependant on a variety of factors,[1] a number of which are influenced by the government policies. One factor is the rate of growth of household incomes. Household savings are inevitably small, and they will increase only with the growth of income. The government tax policy on household incomes affects a great deal, the amount saved out of that income. We must, however, note that the government can save. In such a case there is a change in the origin of savings.

The age distribution of the population in Ghana is another factor explaining a low household savings. The population of the country is "youthful" and thus there is a high dependant rate. This high rate means increased consumption by households and therefore lower rates of savings. High dependancy rate also tends to depress government savings (see below) because it pushes up expenditures for education, health, etc. Another factor affecting household savings is the distribution of income. This problem may concern the distribution of income between capital and labour. The study done by M. Roemer[2] gives the magnitudes of the price of labour relative to that of capital or the wage-rental ratio for Ghana

in the 1960s. This ratio rose from a level of 100 in 1960 (ie. 1960 = 100) to a high level of 124 in 1966. Beginning in 1967, the situation changed dramatically. The wage-rental index fell to 99 in 1967 marking the first break in the pattern of rising relative wages. The figures for 1968 and 1969 were 115 and 111 respectively. In all there has been a 20 to 30 percent drop in the wage-rental ratio since 1966. This means a decline in the purchasing power of households whose main source of income come from wages, and therefore an adverse effect on their savings.

In Ghana, as is typical of most underdeveloped countries, we can also postulate that there is an unequal distribution of income among groups of income earners, for example, between rural and urban population and between landlords and workers. The majority of the population have relatively low incomes and cannot "break even" let alone have surplus income over consumption for savings. Those who are relatively rich have other means of saving (eg. buying jewelry) than making their income available for investment purposes.

The second category of savers are the business firms. Business or corporate savings consist of undistributed profits, that is, part of the income available to the entrepreneurs that remains in the enterprise (or simply retained profits). A predominant part of the business sector in Ghana is composed of mining and manufacturing.

We know in theory that saving is done by the households and investment by the business firms. This seems to be a gross simplification. In practice, the contribution of the business sector to the gross domestic saving is enormous.[3] It is therefore highly desirable to treat business saving in the aggregate savings function as a separate component and not

lump it together with the rest of gross private (or non-government) savings. Unfortunately, in Ghana, the available statistics do not separate the business savings from that of household savings. We suspect that the contribution of the business sector to private savings far exceeds that of the household sector.

Changes in policies of business units as to whether to distribute profits or not have impact on the amount that is saved in each year. In Ghana, especially before 1966, retention of profits was largely due to exchange control regulations blocking full remittance of profits.

Business savings together with household savings are taken jointly as private savings. The magnitudes of these private savings are given in Table 9 where the aggregates have been broken up into those components that give the most economic meaning. Private total revenues come from wages and salaries or labour income; the income of property and enterprise or profit income; and transfers from the government. Labour income as a proportion of GDP changed from 73.8 percent in 1956 to 71.5 percent in 1969, a reasonable situation in an economy where the stock of capital is relatively small, but is growing. The corresponding percentages for global profit income were 12.1 percent and 10.3 percent.

One of the surprising features in the private savings table is negative global profit in the years 1961 and 1962. This may be the result of some very inaccurate data from our basic source material, or it may roughly reflect the true situation in those years. It was a time when an import control regime was started making the importation of almost all items subject to specific licences. The economic surveys in those years

TABLE 9

GHANA: DOMESTIC SAVINGS OF HOUSEHOLDS AND BUSINESS, 1956-1969, AT CURRENT MARKET PRICES

(THOUSANDS OF ¢)

	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
1. Wages and Salaries	517,026	561,443	599,434	664,789	781,244	926,296	960,569	944,167	951,660	1,123,292	1,165,201	1,153,814	1,347,539	1,508,666
2. Income of Property and Enterprise	85,166	67,257	55,479	92,794	30,011	-63,224	-44,137	56,851	183,711	150,666	226,798	167,269	187,555	216,615
3. Transfers from General Government to Households and Business	27,765	25,577	25,064	29,206	37,354	44,648	52,588	58,169	80,551	86,091	97,335	119,859	144,045	136,511
4. Total Revenue	629,957	654,277	679,977	786,789	848,609	907,720	969,021	1,059,187	1,215,922	1,360,049	1,489,334	1,440,942	1,679,139	1,861,792
5. Direct Taxes by Households and Business to General Government	28,528	32,992	37,022	38,807	45,159	50,293	50,035	51,104	87,047	88,911	81,837	82,857	90,364	95,945
6. Private Disposable Income	601,429	621,285	642,955	747,982	803,450	857,427	918,986	1,008,083	1,128,875	1,271,138	1,407,497	1,358,085	1,588,775	1,765,847
7. Private Consumption Expenditures	540,000	596,000	572,000	650,000	694,000	804,000	830,000	916,000	987,000	1,255,000	1,337,000	1,286,000	1,463,000	1,626,000
8. Private Savings	61,429	25,285	70,955	97,982	109,450	53,427	88,986	92,083	141,875	16,138	70,497	72,085	125,775	139,847

Sources: Rows (1) and (2) from T.M. Brown, "Macroeconomic Data of Ghana", mimeo., University of Western Ontario, London, February, 1972, Table F-1; Rows (3) and (5) same as in Table 10. Row (7) same as in Table 1.

Notes: (1) Row 4 = Row (1 + 2 + 3); Row 6 = Row (4 - 5); Row 8 = Row (6 - 7).
(2) The aggregate labour income (row 1) may not include large executive salaries as recorded by Brown; if this were so then the estimates are understated.

point out that the import restrictions did not work smoothly and from time to time resulted in shortages of raw materials and spare parts. Plants could not be operated efficiently for these and other reasons, (e.g. deteriorating standard of management in the economy) and such inefficiencies do, of course, help produce negative profits, especially in the government operated enterprises.

To add to these problems, the price of cocoa began to fall in 1961, and continued to fall until 1963, thus affecting the income of cocoa farmers. This was also a period of inflation, labour unrest and a major strike. However inaccurate the income data may be, it appears that they are telling us something about these difficult years.

The total private expenditures for each year include direct taxes paid to the government and consumption expenditures. The latter expenditure forms an important component of total expenditures of the private sector. We show a breakdown of this expenditure in Table A2 of the appendix.

Private savings for the observation period ranged between ¢25 million (1957) and ¢142 million (1964); other peaks occured in 1960, 1968 and 1969. There was no negative saving in any year in the period studied. Private savings far exceeded government savings (see below) in each year. This indicates that private saving is the most dynamic vehicle of savings formation in Ghana; it has an important role to play in the financing of projects.

Government (or public) saving[4] is introduced finally as one of the aggregates entering gross domestic savings. The broad allocation of

general government (including central, regional and municipal governments) expenditures among different kinds of goods and transfer payments and different sources of revenue and their relative importance is shown in Table 10. This table helps us to analyse the mutual interactions of government and the economy.

The negative regional and local government savings for each year in the sample period is as expected. Most of the revenue is collected by the central government and is then distributed to the regions and municipalities for current and capital expenditures. The general government savings show wide savings. The figures for 1962, 1965 and 1968 are of interest for comment. Those of 1961 and 1965 are explained by drastic changes in the price of cocoa. Since export duty on cocoa contributes a substantial proportion of the central government revenue, any changes in this income directly affect the government revenue and thus savings. 1962 saw a fall and 1965, a rise in the price of cocoa. The negative general government savings in 1968 reflect the true situation in those years. It was a time when ambitious development plans were under way since the 1966 coup, and many State businesses were being created. The State enterprises, however, became merely sinks into which public money was poured. The mining sector could be cited as an example of how the State concerns were inefficiently operated. The tons of ore per man in the State Gold Mining Corporation at Konogo in 1968 was 57.2 while that of a private concern - the Ashanti Goldfields at Obuasi was 110.2. Such inefficiencies again help to produce negative profits and therefore negative saving.

Development plans have generally assumed that public saving would contribute appreciably to the increase in gross domestic saving so

TABLE 10

GHANA: GENERAL GOVERNMENT SAVINGS, 1956-1969, AT CURRENT MARKET PRICES

(THOUSANDS OF ¢)

	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
A. Central Government														
1. Indirect Taxes	75,431	78,760	92,987	95,335	95,159	104,985	109,567	126,652	132,662	200,600	169,587	175,039	206,006	242,224
2. Direct Taxes	24,169	28,445	32,665	34,127	39,991	44,719	44,178	44,755	80,396	81,956	75,562	77,257	84,525	90,012
3. Total Current Revenue	99,600	107,205	125,652	129,462	135,150	149,704	153,745	171,407	213,058	282,556	245,149	252.296	290,531	332,236
4. Consumption Expenditure	44,467	50,011	59,256	66,381	79,931	97,534	94,648	103,208	120,416	133,465	106,303	125,055	155,665	178,127
5. Transfer Payments to rest of Ghana	27,638	25,411	24,886	28,972	37,028	44,311	52,235	57,804	80,177	85,711	96,951	119,468	143,647	136,101
6. Total Current Expenditures	72,105	75,422	84,142	95,353	116,959	141,845	146,883	161,012	200,593	219,176	203,254	244,523	299,312	314,228
7. Central Government Savings	27,495	31,783	41,510	34,109	18,191	7,859	6,862	10,395	12,465	63,380	41,895	7,773	-8,781	18,008
B. Regional and Municipal Government														
8. Indirect Taxes	2,825	3,404	3,941	4,111	6,258	5,349	3,409	6,451	5,826	5,188	5,217	5,280	5,640	5,766
9. Direct Taxes	4,359	4,547	4,357	4,680	5,168	5,574	5,857	6,349	6,651	6,955	6,275	5,600	5,839	5,933
10. Total Current Revenue	7,184	7,951	8,298	8,791	11,426	10,923	9,266	12,800	12,477	12,143	11,492	10,880	11,479	11,699
11. Consumption Expenditure	11,030	11,708	11,595	11,885	12,780	13,235	13,877	14,358	14,666	14,866	14,879	15,146	15,361	15,908
12. Transfer Payments to rest of Ghana	127	166	178	234	326	337	353	365	374	380	384	391	398	410
13. Total Current Expenditures	11,157	11,874	11,773	12,119	13,106	13,572	14,230	14,723	15,040	15,246	15,263	15,537	15,759	16,318
14. Regional and Local Government Savings	-3,973	-3,923	-3,475	-3,328	-1,680	-2,649	-4,964	-1,923	-2,563	-3,103	-3,771	-4,657	-4,280	-4,619
15. General Government Savings	23,522	27,858	38,035	30,781	16,511	5,210	1,898	8,472	9,902	60,277	38,124	3,116	-13,061	13,389

Source: T.M. Brown, op. cit., Table E-1, for rows 1, 2, 8 and 9; Table E-3, for rows 4,5, 11 and 12.

Notes: Row 3 = Row (1 + 2); Row 6 = Row (4 + 5); Row 7 = Row (3 - 6); Row 10 = Row (8 + 9); Row 13 = Row (11 + 12); Row 14 = Row (10 - 13): Row 15 = Row (7 + 14).

as to undertake government projects. Contrary to the assumptions made in the plans, public savings, as shown in Table 10, have tended to be small and have been moving at an irregular manner. Apart from the isolated cases discussed above, the general result has been occasioned by the fact that recurrent expenditures have advanced much more sharply than was assumed in the plans. This phenomenon has in turn been the result of the failure to make detailed studies of the likely trend at the time of plan formulation. Further, there has often been a tendency for progress in the implementation of public investment programmes to be greater in the social (e.g. education and health) and administrative sectors than in the economic sectors (e.g. agriculture, mining, manufacturing and construction); and investment in the former trends to generate greater increases in recurrent expenditure than does investment in the latter. For example, from 1962 to 1969 social services claimed the largest proportion of the total government recurrent expenditure. This sector on the average represented 38 percent of the total recurrent expenditure, while the economic sector represented only 14 percent.

Moreover, unexpected events (especially rapid changes in governments by coups) have caused some rearrangements of priorities giving rise to higher levels of current expenditure. For instance, increases in defence expenditure, because of military regimes have partly been responsible for the rise in the recurrent expenditure. Furthermore, unexpected increases in prices have necessitated the upward revision of planned levels of recurrent expenditures. The estimated figures for recurrent expenditures of 1968/69 and 1969/70 financial years mere ¢325 million and ¢333 million respectively, but the actual figures were ¢317 million and ¢344 million. The increase in the 1969/70 figure was explained as "due to the

implementation of the Mills-Odoi Report on public service salaries and pensions, which raised the level of recurrent expenditures".[5]

The composition of the government revenue reflects Ghana's dependence on international trade, and the relatively little development in internal tax system. A large share of revenues are derived from taxes on international trade (i.e. export and import duties) - see Table A3 at the appendix.

Between 1962 and 1967, duty on imports was the main source of government revenue which on the average, provided about one-third of total revenue. In 1968 and 1969, this situation changed as a result of "the change in import licencing policy which gave priority to spare parts and raw materials on which duties are relatively low,"[6] and "as a result of substantial decline in rates of import duty on some essential commodities like motor spirits, flour and sugar."[7] Another reason for the decline in import duties in the 1967 to 1969 period was the heavy import restrictions.

Export duty on cocoa (which is a residual after payment to cocoa farmers), shows a great deal of variation depending on world prices of cocoa. In contrast to previous years, export duty on cocoa was the main source of revenue in 1969. The high world prices for cocoa which prevailed during the year was the main contributory factor. The lowest duties were collected in 1965 and 1966 when the world price for cocoa was very low. This has meant that significant declines in world price of the principal export of Ghana, cocoa, have directly influenced the reduction of government savings via a decline in tax receipts on cocoa exports.

From a long run point of view it may be more important to note what has happened to internally raised indirect taxes. Such taxes accounted

for 26.3 percent of total revenue in 1966. This was a substantial increase over the level of their share in the early 1960s. Income tax forms a substantial proportion of total revenue. Its share in the total revenue increased from 16.2 percent in 1962 to 20.5 percent in 1969. During the years between 1962 and 1969, the absolute revenues from income taxes have more than doubled. "Considering the difficulties of collection facing the central revenue authorities, the achievement of the past few years is commendable, but there is still room for improvement."[8] I have argued elsewhere[9] that except the tax administration is rigorously overhauled, coupled with the possibility of extending the tax net and revision of the existing tax rates on income tax and duties on production, the government cannot have the maximum amount of resources from these sources to meet its manifold responsibilities. In addition to the efficient tax administration, purposeful expenditures and economy in government operations are the main weapons which, if used effectively, can relieve the Ghanaian society of the costs and consequences of waste.

In Table II we present gross domestic saving as a sum of net private savings, net public savings and depreciation allowances on business capital; the business sector includes government owned and operated business which in Ghana is a large component of total business. The gross domestic saving is used to finance government and business investment. The gross investment is arrived at by adding import surplus to gross domestic saving. Alternatively, we could obtain estimates of gross domestic saving by deducting from gross domestic capital formation, the contribution made by import surplus; these estimates are shown in Table 12. In absolute terms, the gross domestic saving in 1969, increased by more than twice the low level in 1956. The absolute figures show saving as a well-behaved function for

TABLE 11

SOURCES AND USES OF GROSS DOMESTIC SAVINGS IN GHANA, 1956-1969, AT CURRENT MARKET PRICES

(THOUSANDS OF ¢)

	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
1. Private Savings	61,429	25,285	70,955	97,982	109,450	53,427	88,986	92,083	141,875	16,138	70,497	72,085	125,775	139,847
2. General Government or Public Savings	23,522	27,858	38,035	30,781	16,511	5,210	1,898	8,472	9,902	60,277	38,124	3,116	-13,061	13,389
3. Depreciation Allowances	20,985	25,490	29,330	33,191	40,127	49,724	51,996	53,913	57,914	71,592	86,198	108,600	128,262	136,730
4. Gross Domestic Savings	105,936	78,633	138,320	161,954	166,088	108,361	142,880	154,468	209,691	148,007	194,819	183,801	240,976	289,966
5. Import Surplus	16,000	22,000	-30,000	12,000	50,000	82,000	30,000	56,000	36,000	124,000	66,000	35,000	-15,000	-31,000
6. Gross Investment	121,936	100,633	108,320	173,954	216,088	190,361	172,880	210,468	245,691	272,007	260,819	218,801	225,976	258,966

Sources: T.M. Brown, op. cit., Table F-5, for row (3).
Row (5) calculated from Table 1.
Row (1) same as in Table 9.
Row (2) same as in Table 10.

Notes: Row 4 = Row (1 + 2 + 3); Row 6 = Row (4 + 5).

TABLE 12

ACTUAL GROSS DOMESTIC SAVINGS AND RELATED MACRO VARIABLES OF GHANA,

1956 TO 1969, AT CURRENT MARKET PRICES (¢ MILLIONS)

YEAR	GNP	GROSS DOMESTIC INVESTMENT	GDI % of GNP	IMPORT SURPLUS	ACTUAL GROSS DOMESTIC SAVINGS	AGDS % of GNP
	(1)	(2)	(3)=(2)÷(1)%	(4)	(5)=(2)-(4)	(6)=(5)÷(1)%
1956	702	122	17.4	16	106	15.1
1957	734	100	13.6	22	78	10.6
1958	776	108	13.9	-30	138	17.8
1959	884	174	19.7	12	162	18.3
1960	945	216	22.9	50	166	17.6
1961	1,008	190	18.8	82	108	10.7
1962	1,084	172	15.9	30	142	13.1
1963	1,190	210	17.6	56	154	12.9
1964	1,345	246	18.3	36	210	15.6
1965	1,589	272	17.1	124	148	9.3
1966	1,779	261	14.7	66	195	11.0
1967	1,757	219	12.5	35	184	10.5
1968	2,028	226	11.1	-15	241	11.9
1969	2,285	259	11.3	-31	290	12.7

Source: Col. (1) same as in Table 1.
Cols. (2) and (4) calculated from Table 1.

prediction purposes.

If we express actual gross domestic saving as a percentage of GNP of Ghana, we can distinguish three distinct periods: a moderately high rate from 1957 to 1961; a lower level from 1962 to 1965; and a stable but still a lower level from 1966 to 1969. These empirical results indicate that internally generated savings were obsimally low.

Our task is to examine other causes of these unimpressive domestic savings, especially private savings. Consider the domestic price level and rate of interest on deposits. The average compound rate of inflation from 1957 to 1969 was about 8 percent per annum. There were wide swings in the rates, such as the rapid inflation of 1965 (16.9 percent) and the deflation of 1967 (-2.3 percent). The interest rates on deposits and loans in the organized institutional segments of the capital market, on the other hand, show that most deposit rates were on the average negative in real terms. Thus changes in the rate of inflation were seldom reflected in deposit rates, showing these rates as extremely low and unresponsive to changes in the degree of domestic inflation.

Interest rates on deposits and loans in Ghana are shown in Table 13. The rates remained constant for most of the period until after 1965, when rates on fixed deposits of over twelve months, bills discounted and on loans showed a small increase. Rates on savings deposits in 1969 fell below the level prevailing in 1958. It is only the rates on six months fixed deposits which in 1969 were more than double those of 1958. These rates were not in line with other countries (especially the advanced countries such as U.K. and U.S.) and since the Ghanaian capital market is linked to outside markets, any failure of the Ghanaian rates to respond meant increased incentive for savers to transfer funds abroad. The low

TABLE 13

SELECTED INTEREST RATES IN GHANA, 1958 TO 1969 (% PER ANNUM)
COMMERCIAL BANKS (END OF YEAR)

	Savings Deposits	6 Months Fixed Deposits	Over 12 Months Fixed Deposits	Bills Discounted	Loans Secured
1958	3.0	1.5	2.5	9.0 to 10.0	6.5
1959	2.5	1.5 to 2.0	2.0	6.0 to 6.5	4.0 to 5.0
1960	3.0	2.5	3.0 to 3.5	6.5 to 7.5	6.0 to 6.5
1961	3.0 to 3.5	2.5	3.0 to 3.5	7.0	5.5 to 7.0
1962	3.0 to 3.5	2.5	3.0 to 3.5	7.0	5.5 to 7.0
1963	3.0 to 3.5	2.5	3.0 to 3.5	7.0	5.5 to 7.0
1964	3.0 to 3.5	2.5	3.0 to 3.5	7.0	5.5 to 7.0
1965	3.0 to 3.5	2.5	3.0 to 3.5	7.0	5.5 to 7.0
1966	3.5	2.5 to 2.75	3.0 to 3.75	7.5 to 9.5	7.0 to 9.0
1967	3.0 to 3.5	2.75 to 3.25	3.25 to 3.5	7.0 to 10.0	6.5 to 10.0
1968	2.5 to 3.5	2.75 to 3.0	3.25 to 3.5	6.0 to 10.0	6.5 to 10.0
1969	2.5 to 3.5	2.75 to 3.0	3.25 to 3.5	7.0 to 10.0	6.5 to 10.0

Source: Bank of Ghana, Quarterly Economic Bulletin; Vol. 11, No. 3, July-Sept. 1971, p. 38 for 1965 through 1969; and for 1958 through 1964 supplied by the Bank of Ghana.

return on domestic savings resulted in the sample period, a low S_0 (each current year savings) and α' (marginal potential saving rate - $\frac{\Delta \bar{S}}{\Delta Y}$) and which in turn meant a low potential ($\bar{S}_t$) and actual (S_t) gross domestic savings.

The savings rate of about 14 percent, need to be raised to between 15 and 20 percent in the projection period. The government has to choose a mix of monetary and fiscal reforms so as to increase its capacity to provide more adequate incentives for savers to hold money and other assets, as an effective alternative to acquisition of consumer goods in the use of funds. On the segmentation of the capital market, there should be the provision of opportunities, that is, the opening or widening of channels through which savings can flow. This means the establishment of other financial intermediaries to harness any saving potential. The important among these is the establishment of stock exchange through which the individual investor is enabled without too much risk and with maximum of convenience to put his savings, voluntarily, at the disposal of enterprise in return for a share in its ownership and profits.

The establishment of such a capital market will constitute one of the institutional instruments of "break through" for a developing economy such as Ghana.[10] A further step is to expand the banks' facilities to the rural areas so as to enable the government to tap small savings which otherwise would have been used for consumption or hoarded.

We have seen that inflation has reduced the real interest rates on bonds, bills and saving deposits in Ghana. To overcome these consequences of inflation, there should be an increase in the nominal interest rates on saving deposits so as to maintain for potential savers a positive rate

of return in real terms.[11] A first step to achieve this goal was started in July 1971 when a monetary reform raised interest rates on savings deposits of commercial banks from 2.5 to 7.5 percent and of Post Office Savings Bank from 2.5 to 5.0 percent.

A combination of such policies should encourage savers to increase their financial assets held by the financial institutions, thus enabling the country to finance a higher level of investment from its own resources.

The Investment Function

Investment involves the application of savings to some specific form of productive activity. The first question that arises is whether to consider the gross or net investment. Net investment data for Ghana are extremely hard to come by, and in the few instances where some estimates have been produced, they certainly do not inspire confidence. Therefore invest (I_t), must be taken as gross investment for the purpose of the estimation procedure.

Investments in Ghana, like other developing countries are undertaken by the business firms and by the government. We shall examine the factors affecting the level of investments by these two sectors, the nature of the investments and any empirical evidence to explain the trends.

Keynesian theory (and the presentation of it) stresses the importance of the marginal efficiency of capital as a determinant of investment behaviour. Such representation of Keynes' theory is unsatisfactory for it neglects the double-sided relationship between the rate of profits and the rate of capital accumulation (or investment).[12] It is the

expected rate of return on investment and the level of investment for which decisions have been made in the period under study (and the associated level of profits), that explain the rate of investment firms will try to carry out.

The expected rate of return on investment depends on the recent history of the economy, the way in which expectations are formed, the saving propensities, and the existing productive capacity. The level of present investment also depends on Keynes' "animal spirits", current level of profits, and retained earnings, as well as the rate of interest. Although such treatment of investment behaviour applies to highly developed capitalist system, there are features of it which are relevant to the investment function in Ghana.

Investment activity in Ghana is conditioned by the desire of firms to grow and to increase productivity. The factors affecting the level of investment in Ghana are, however, not solely economic. High or low propensity to invest has depended on the political, historical and psychological characteristics of the economy.

A high rate of interest and more stringent credit conditions in Ghana, in general, would lead to a decrease in the rate of investment by firms. These factors would make it more difficult for firms to finance investment and the higher rate of interest means that the difference between any expected rate of return and the rate of interest would be less. The structure of the Ghanaian economy and the attitudes of firms are such that the effect of changes in the rate of interest on the rate of investment is very limited. First, because of the high inflation in the Ghanaian economy in the observation period (see the previous section),

a low interest rate still make some investment ventures uneconomic. Moreover, the Ghanaian market is relatively underdeveloped (large non-monetized sector) for people to think of what the normal prices would be and what would be a permissible range of variation. Thirdly, expectations of new developments, like changes in governments by coups and policies, which in turn increase non-business risks, do not offer good prospects for firms.

There is no absolute certainty of a prediction of stability in Ghana. For this reason there are uncertainties as to the conditions under which firms operate in the country. Examples are given by the many arbitrary changes in laid down policies which affect the investors' cost of doing business. A good case in point is the rapid changes in labour legislation. For instance, there was an introduction of a minimum wage legislation in 1960. The result was a shift upwards in wage rates.[13] Such arbitrary changes affect the business cost functions. Because of such risks attached to the outcome of investment projects in Ghana, reductions in the rate of interest are not enough incentives to investors. Sensitivity of investment to the rate of interest in Ghana is therefore not high.

Non-business risks also affect the time patterns for the implementation of investment decisions. The expectation that there may be a coup, with the consequent changes in policies in the next few years means that investors will prefer to undertake short-term investment projects.

A significant part of private investment is financed out of retained earnings and their size would also affect the ability of firms to undertake investment. Retained earnings are a function of past and present profits and the decision of firms as whether to redistribute

profits or not.

The current rate of plant utilization and expected increases in demand affect investment decisions in Ghana. In the Ghanaian economy where there is considerable under-utilization of capital, firms may concentrate their attention in increasing the productive capacity of their existing plants, rather than putting up additional plants. Furthermore, the size of the Ghanaian market, sets a limit to the level of utilization of the plants of the firms, and the extent of new investments they can make.

The above factors are important, as far as the business firms' investment decisions are concerned. But there are others which are particularly important in determining the level of government investment. The government budget restraint is crucial in putting a ceiling on the level of its investment. In each period total government expenditure (transfer payments plus purchases of goods and services) must be equal to the total flow of financing from all resources. This means there is a constraint upon the government's freedom to choose arbitrary values of such policy variables as expenditures, taxes, net amount of borrowing from the private sector. Thus the government's investment expenditures are always set in relation to the availability of resources.[14] There are also cases where certain complementary goods are not produced at home. In this situation, the level of investment depends, in the short run, on the availability of imported complementary goods. This may be considered as a purely technological relationship. Finally, the Ghana government's investment activities are not solely motivated by the requirements of general economic growth. Political considerations in some cases overshadow any economic benefits.

If an investment of capital is decided upon, there are two courses open to entrepreneurs in Ghana: one is to seek capital from resources within the business; the other is to seek access to the savings of others outside the business. Given the relatively limited degree of financial intermediation in Ghana, one can expect that a great deal of the capital that is invested in business enterprises in the country, comes from the "ploughing back" of retained profits, although we have no data to indicate the approximate magnitudes involved. As Leith notes, "self finance by business savings is not necessarily inefficient, for the option of lending out the funds is always open and in a profit maximizing equilibrium situation, only those funds which are expected to generate rates of return equal to or in excess of the lending alternative would be applied to self-financed investments."[15] However, where as in Ghana, the options for outside application of funds are severly limited due to the substantial segmentation of the capital market, there is generally a very low alternative rate of return available on most business savings. As a result, the choices of the business saver are distorted.

In Ghana where detailed statistics regarding investment are available, the breakdown offered is one into investments by type of asset. In Table 14 we present the composition of gross domestic investment according to type of assets, and the percentages distribution of gross domestic fixed capital formation at Table 15. The gross investment is broken down into buildings, other construction works, transport equipment and changes in the stocks of inventories (or working capital). Gross domestic investment increased from a level of ¢100 million in 1957 to ¢216 million in 1960, and after falling for the next two years stayed at almost a constant level up to 1969.

TABLE 14

COMPOSITION OF GROSS DOMESTIC INVESTMENT

BY TYPE OF ASSETS, 1957-1969,

AT CURRENT MARKET PRICES

(¢ MILLION)

	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Buildings	60	60	72	88	100	96	102	108	110	107	92	92	101
Other Construction Works	22	24	32	34	40	42	48	62	64	65	56	55	60
Transport Equipment	16	10	22	34	40	20	24	26	38	25	21	25	26
Machinery and other Equipment	14	16	28	38	30	26	44	36	59	49	44	52	55
Gross Domestic Fixed Capital Formations	112	110	154	194	210	184	218	232	271	246	213	224	242
Changes in Stock of Inventories	-12	-2	20	22	-20	-12	-8	14	1	15	6	2	17
Gross Domestic Investment	100	108	174	216	190	172	210	246	272	261	219	226	259

Source: C.B.S., Economic Survey, (Accra), 1967 and 1969.

TABLE 15

PERCENTAGE DISTRIBUTION OF GROSS DOMESTIC FIXED CAPITAL FORMATION BY TYPE OF ASSETS, 1957-1969

Percentage

	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Buildings	53.6	54.6	46.7	45.4	47.6	55.2	46.8	46.6	40.6	43.5	43.1	41.1	41.7
Other Construction Works	19.6	21.8	20.8	17.5	19.0	22.8	22.0	26.7	23.6	26.4	26.3	24.6	24.8
Transport Equipment	14.3	9.1	14.3	17.5	19.0	10.9	11.0	11.2	14.0	10.2	9.9	11.1	10.7
Machinery and other Equipment	12.5	14.5	18.2	19.6	14.4	14.1	20.2	15.5	21.8	19.9	20.7	23.2	22.8
Gross Domestic Fixed Capital Formation	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: C.B.S., Economic Survey, (Accra), 1967 and 1969.

The Ghanaian economy during 1957 to 1969 was growth-oriented with a considerable increase in accumulation of capital. Gross domestic fixed capital formation relative to GNP, while highly variable, shows some clearly discernible periods. Capitalization greatly intensified from 1957 and by 1961 had reached a high level of ¢210 million; it declined in 1962 and 1963 and the post coup period. The increase in gross domestic investment in fixed capital in 1969 "was mainly due to the increase in central government investment."[16] There was a rise in plant and construction activities in the period under review and the rise in this category in 1969 was "aided by the sharp increase in local production of cement and the increased imports of building materials."[17] There was a substantial rise in investment in transport equipment in 1960 and 1961 as fishing vessels, air-crafts and other heavy trucks were purchased. Inventory investment was highly volatile.

Of more interest is the response of output to the substantial additions to capital stock. One measure is the incremental gross capital-output-ratio. If we assume a one-year lag between investment and changes in output, our computation involves an incremental capital-output ratio of 4.46 in the entire sample period and 3:1 in 1968 and 1969. We can also adopt a measure which involves the use of a capital stock series as constructed by T.M. Brown (see Table 16). The resulting average capital-output ratios in constant 1960 prices show a rapid decline in the average productivity of capital which was checked only by 1969, despite the fact that the capital stock constantly increased. For instance, it has been estimated by Peter Newman that relative utilization of the stock of capital in 1968 was only about 80 percent of the (not particularly favourable) level that was obtained in 1960.[18]

TABLE 16

GDP; CAPITAL STOCK, AND AVERAGE CAPITAL-OUTPUT RATIOS, 1956-1969

(¢ MILLIONS, CONSTANT 1960 PRICES)

	GDP	CAPITAL STOCK	AVERAGE CAPITAL-OUTPUT RATIO
	(1)	(2)	(3)=(1)÷(2)
1956	767	417.60	1.8367
1957	802	504.53	1.5896
1958	772	583.80	1.3224
1959	889	701.61	1.2671
1960	956	842.15	1.1352
1961	990	979.61	1.0106
1962	1,038	1,091.30	.9512
1963	1,074	1,229.84	.8733
1964	1,097	1,363.33	.8046
1965	1,112	1,516.88	.7331
1966	1,113	1,616.19	.6887
1967	1,133	1,656.03	.6842
1968	1,149	1,681.36	.6834
1969	1,190	1,710.18	.6958

Sources: Col. (1) same as in Table 2.
Col. (2) computed by T.M. Brown, op, cit., Table D-1.

The above facts suggest the possibility of major misallocations of resources. We now turn to examine these. During the period under study, incremental gross captial-output ratio, $k(= \frac{I}{\Delta V})$ is high because of policies that promote capital-intensive investment resulting in high $\bar{I}_t$ (i.e. required gross investment). First we know that within any industry there is usually some flexibility to substitute labour for capital and still produce efficiently. We have noted that between 1957 and 1966 there was a high wage-rental ratio. These rising wages made capital-intensive methods increasingly attractive. That is, the investment mix was skewed in favour of capital intensity and against employment creation. "This rise in relative labour costs may have contributed somewhat to the high capital-output ratios observed in Ghana during the 1960's."[19] Besides, the government's non-market policies towards its own investments and the growing scarcity of imported inputs (there is a high content of imports in local industry) have undoubtedly been much more important causes of low capital productivity.

The capital-intensive path of development is not a good option that is open to Ghana in the projection period. On the one hand, it is suggested that there should be increase in investment in education and other services and the production of essential inputs and consumption goods now imported. The government must play a leading role in this task. Many of the services provided by the government are essential aids to economic growth. Accelerated expansion in secondary, technical, commercial and higher education will be necessary to provide the additional educated manpower and productive skills of the labour force needed to sustain the desired growth rates in output.

If, on the other hand, the economy is able to increase the

utilization of existing capital, especially in the manufacturing sector, a lower rate of investment might suffice to support the target rate of growth. This suggests that to raise the productivity of the existing resources is one of the solutions of raising the growth rate in the short-run (i.e. efforts on getting to the existing production possibility curve). There could be only a low rate of investment levels (a push of the frontier outward), but there is the need to improve organization and utilization of installed capacity. This raises the question about the allocative mechanism and the role of the state. Of course, over the long run, economic policy should concentrate on both tasks on staying on the frontier wherever it happens to be and on pushing it outwards as far as possible.

The Export Function

We now turn to one aspect of the foreign trade sector. In Ghana export trade accounts for a substantial part of total output, and trends in exports have accordingly extended a considerable influence on the overall growth.

Ghana's commerce with the outside world, has several features. First, the country's exports are predominantly primary products, that is, agricultural products, foodstuffs, raw materials and minerals. Table 17 shows the shares in total export earnings of the country's export commodities. Export earnings of cocoa, provided the major share of Ghana's foreign exchange revenues in the observation period, as they had done for many years previously. The non-cocoa exports, on the other hand, typically accounted for 35 to 40 percent of total export earnings.

Because of its importance in the Ghanaian economy, cocoa prospects are studied in detail. Not only does the demand for Ghana's cocoa

TABLE 17

VALUE OF EXPORTS OF DOMESTIC PRODUCTS

1957 - 1969*

per cent of total exports

Commodity	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Cocoa Beans	56	60	61	59	61	60	63	61	61	56	55	55	56
Cocoa Products**	-	-	-	-	1	3	3	4	6	7	10	8	7
Timber (logs and sawn)	11	11	12	14	13	11	12	13	11	11	9	9	10
Manganese	10	8	6	6	5	5	4	4	4	7	4	3	2
Diamond	10	8	8	9	6	7	3	5	6	6	5	5	4
Gold	11	10	10	10	10	10	11	9	9	9	9	9	8
Others***	-	-	-	-	3	4	3	4	4	5	8	11	14

*Figures may not add up to 100, due to rounding.
**Cocoa products include cocoa paste, butter and cake.
***Others category includes bauxite and kola-nuts.

Source: C.B.S., Economic Surveys, Accra, (various issues).

(and other export commodities) depend on incomes and many influential policy factors in advanced countries but also it is heavily affected by export supplied in other cocoa producing countries. Complexities of factors also affect the supply side. A projection structure for cocoa exports therefore becomes difficult. We shall, however, extrapolate from past trends and check for consistency against estimates for total world demand and supply expansion.

From the beginning of the base year, cocoa has accounted for about 60 percent of export receipts and has been a major source of stability in those receipts, despite the fluctuations over the years in the export volume. Ghana's export earnings are therefore sensitive to fluctuations in world cocoa prices. The basic statistics about the world production of cocoa and Ghana's share of the total are given in Table 18.

The world's production and consumption of cocoa have increased about one and a half times since 1966. Production expanded from 893 thousand tons in 1956/57 crop year to 1,230 thousand tons in 1968/69, an increase equivalent to an annual compound rate of growth of 2.1 percent. The lowest figure was recorded in 1957/58 (772 thousand tons) and the record figure in 1964/65 (1,485 thousand tons). World consumption (expressed by the volume of beans ground) expanded from 909 thousand tons in 1956/57 to a level of 1,338 thousand tons in 1968/69, with the highest consumption figure being recorded in 1967/68 (1,396,000 tons). Most of the world cocoa crop is shipped as beans and is ground and manufactured into chocolate and other cocoa-containing products in importing countries, mainly developed countries. From 1956/57 to 1958/59 and since 1965/66, grindings have exceeded production the difference being made up by reduction of stocks.

TABLE 18

BASIC STATISTICS ABOUT COCOA

(THOUSAND LONG TONS)

	1956-57	1957-58	1958-59	1959-60	1960-61	1961-62	1962-63	1963-64	1964-65	1965-66	1966-67	1967-68	1968-69
1. World Production	893	772	908	1,039	1,175	1,123	1,158	1,220	1,485	1,209	1,338	1,340	1,230
2. World Consumption (Grinding)	909	848	867	929	1,016	1,109	1,144	1,181	1,322	1,375	1,370	1,396	1,338
3. Production in Ghana	264	207	255	317	433	410	422	436	557	410	375	415	334
4. Ghana's Production as % of World Output	29.6	26.8	28.1	30.5	36.8	36.5	36.4	35.7	37.5	33.9	28.1	31.0	27.2
5. London Market Price of Ghana's Cocoa (¢) Per Long Ton*	494	704	570	450	360	340	417	381	282	392	569	796	1,034
6. Proceeds from Ghana's Cocoa Export (¢ Million)	101.7	124.6	137.6	132.9	138.6	134.1	136.2	136.2	136.5	102.8	130.7	185.6	158.3

Source: C.B.S., Economic Surveys, Accra, (various issues) for rows 1-5; and row 6 from IMF, International Financial Statistics, 1971 Supplement, pp. 90-91.

Note: *This is the average of London market price paid for Ghana's cocoa. It is very close to the average of New York market price.

This means that the rate of growth in world absorption of cocoa has steadily kept ahead of world supply in some years, resulting in increases in price.

Output of cocoa in Ghana shows a similar time pattern with the world output. It has increased substantially in recent years - from 264,000 long tons in 1956/57 to a plateau of over 400,000 tons in the first half of the 1960s, the highest point being 557,000 tons in 1964/65. The lowest figure of 207,000 tons was recorded in the 1957/58 crop year. There was a fall in the volume of cocoa beans export but considerable increase in export earnings in 1969. The volume decreased from 330 thousand long tons in 1968 to 303 long tons in 1969 which indicates a drop in export of 26 thousand long tons or 7.9 percent. On the other hand, total export receipts of ¢218.6 million earned in 1969 far exceeded 1968 total figure of ¢185.6 million by ¢33.0 million or 17.8 percent. This increase in export earnings associated with a lower volume of cocoa beans exports is solely accounted for by the high world prices of cocoa obtained during the year which registered a record annual average of ¢1,034 per long ton. The data provide a picture of significant and relatively stable negative relationship between cocoa volume and price.

Ghana's substantial share of the world output of cocoa has a number of implications. Because of this major position and because of the long gestation period (about 7 years) for new plantings, the policy options for cocoa are considerably more complex. We consider the demand side. Ghana cannot take the world price of cocoa as given. In the long run, any expansion of output would increase Ghana's revenue from cocoa exports. Looking at the situation in the short run, the demand elasticity facing Ghana, as is quoted in Leith's recent work, is less than -1 with

the result that a sudden expansion of quantity sold means a decline in receipts. This actually happened in the bumper crop years, for example in 1964/65. There is stock piling when price declines, but there is serious price weakness in subsequent years until the excess inventories are worked off.

On the supply side we have several factors entering into the picture. The gestation period to full bearing for cocoa trees is about seven years, and hence present output is a function of the stock of trees planted a few years back. The second set of conditions is the producer price of cocoa. The output of the cocoa farmers is purchased by the Cocoa Marketing Board (C.M.B.) which also has legal monopsony powers. The Board sets a price which is usually held for a year or more without direct reference to the export price. The main and mid crop producer prices of cocoa from 1963 to 1969 are shown below:

PRODUCER PRICES OF COCOA IN GHANA

Cedis per Head Load

Year	1963/64	1964/65	1965/66	1966/67	1967/68	1968/69
Main Crop	5.4	5.4	4.0	4.5	6.5	8.0
Mid Crop	5.4	5.4	4.0	5.0/6.5	8.0	8.0

Source: F.A.O., F.A.O. Commodity Review, Rome, 1968, p. 91.

Other things being equal, the higher the producer price of cocoa, the higher the level of output, both in the short run and in the long run. In the longer run, it will mean increase in planting of new trees. In the shorter run it will involve intensive harvesting and the introduction of large scale programmes of spraying against diseases and pests, particularly

capsids and thus keeping the trees healthy. In addition, there will be improved maintenance work on the cocoa farms. Another factor that has major effects on the supply of cocoa is the weather conditions. For example, excessive rainfall and humidity during the late maturing stage of the pods can damage the crop. Excessive rainfall render spraying difficult and thereby affect flowering; it also affects the drying of the beans. Improvements in total out-turn in 1969 is said to "be attributed to improvements in weather conditions which became favourable to plant growth and good pod development."[20]

The trend in world consumption of cocoa is upward over the longer run if supplies are available, and in this case much depends on Ghana's share of the total. Production in 1975 will come from trees already planted. The unresponsiveness of producer prices cited above has resulted in a relative decline in the attractiveness of growing cocoa for exports, and thus a withdrawal of resources from the cocoa sector. In 1964/65 new plantings ceased, and have apparently not been resumed since. For the long run this suggests a potentially serious stagnation of cocoa export earnings. As is documented by F.A.O., "Variations in successive crop forecast, will continue to engender wide price savings, unless these can be held in check through the operation of export or sales quotas and/or buffer stocks under an international agreement."[21] If present trends continue the production target of 550,000 long tons in Ghana will be achieved in 1975.

We now turn to non-cocoa exports. In sum, this sector remained in a state of relative neglect. We review the performance of the extractive industry. Ghana's principal mineral products are gold, diamonds, manganese and bauxite. Table 19 indicates the quantities and values of minerals produced in Ghana from 1957-69. It will be noticed that the

TABLE 19

PRODUCTION OF MINERALS

(UNIT IN THOUSANDS AND VALUE IN ¢ MILLION)

Mineral	Unit and Value	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Gold	Fine ounches	790	853	913	879	834	888	927	860	755	684	767	735	713
	Proceeds	19.8	21.3	22.8	22.0	20.8	22.2	23.0	21.6	19.0	17.1	22.5	26.0	25.3
Diamonds	Carats	3,125	3,132	3,076	3,281	3,214	3,210	2,682	2,668	2,273	2,819	1,990	2,997	2,477
	Proceeds	18.0	17.3	17.3	19.7	14.3	14.9	6.7	12.2	13.5	10.8	12.6	17.4	13.9
Manganese	Tons	652	535	522	545	432	373	401	455	590	568	445	440	324
	Proceeds	15.0	14.4	11.3	10.7	9.7	9.2	6.7	6.8	8.7	12.2	9.2	10.6	6.9
Bauxite	Tons	180	186	195	191	201	239	309	246	304	347	296	237	242
	Proceeds	*	*	*	*	*	*	*	1.3	1.3	1.5	1.6	1.5	1.4

Source: (1) Volume: C.B.S., 1965-66 Statistical Year Book, Accra, 1969 for data for 1957 through 1966; C.B.S., Economic Survey, 1969, Accra (1970) for data for 1967 through 1969.

(2) Value: IMF, International Financial Statistics 1971 Supplement, pp. 90-91.

Note: * Not available.

performance of all the extractive industries was on the decline in 1969. Except in the field of bauxite mining, all other minerals showed a fall in output in 1969 as compared to their 1957 levels. Turning attention from quantities to values, we find the position no better. The higher figures of value from 1967 to 1969 are the result of devaluation of the Ghanaian currency. The devaluation in 1967 was helpful to the mining industry generally, and to the gold and manganese mines in particular. Because not all their inputs are imported, the mining and timber industries had their total input costs increased by less than the rate of the devaluation, with the result that they benefited by more than the rate of the devaluation.

Gold mining is the largest extractive industry in the country, both in respect of value of output and employment. The Ashanti Gold Mine at Obuasi is the single largest mine in the country. There are five other mines (all form part of the State Gold Mining Corporation), with a long history of operations. Output in this sector has been falling recently. "A contributory factor to the decline in gold output was Bibiani Goldfields' decision to cease production and concentrate wholly on exploration."[22] However, recent developments have indicated that it is possible to expand the level of output of this mineral, especially in the Ashanti Gold Field. The new developments consist of the take-over of the mines by a new management and the revision of lease on mining rights. These two developments are rather too recent to help us indicate the increase in output at the moment.

Diamond mining is next in importance to gold. The decline in the value of diamond exports in recent years was due mainly to the working

on lower grade grounds and as a result of changes in prices. It appears that the proven deposits in this sector have been largely exhausted; some of the mines have been closed down. Although the Bibiani mine has been re-opened, there is no evidence of increase production. It has been confirmed with investigations into the Birim River that it supports large scale expansion of the industry to yield increase production. In the field of the state sector, however, the outlook appears not so bright. What is needed is a more active role of an organized private enterprise with well organized prospecting and greater use of equipment for dredging and recovery. Such a set up in turn requires sustained incentives.

Manganese mining has been in a precarious condition for some time. The manganese mine at Nsuta (the only known area of manganese deposit) has almost reached the end of its useful life and there are all indications that it will close down in the next few years.

Bauxite so far has a bright future. Deposits are in sufficient quantities to justify intensive mining. The only requirement now is for the installation of the facilities required for physical mining of the deposit, especially as the country has already an aluminium processing factory which, in fact, was a pre-condition for the development of Volta Hydro-electric Dam. Negotiations leading to the establishment of such mining facilities have started.

One key area of new development is likely to emerge. This is an oil drilling. Deposits of oil have recently been discovered along the coast of Ghana. If further prospecting results in successful strike, it will be a substantial addition to the natural resource base of the economy.

A third important export product is timber. The values of

both logs and sawn timber from 1957 to 1969 are given below:

VALUE OF LOGS AND SAWN TIMBER, 1957-69

¢ Million

1957	'58	'59	'60	'61	'62	'63	'64	'65	'66	'67	'68	'69
20.0	22.1	26.1	31.8	29.9	24.8	26.0	29.6	24.7	20.9	22.4	28.5	39.2

Source: C.B.S., Economic Survey, Accra, (various issues).

The foreign exchange receipts of timber products stayed at almost a constant level from 1957 up to 1968. There was a substantial increase in earnings from a level of ¢28.5 million in 1968 to ¢39.2 million in 1969. The increase in earnings was "due to increased output resulting from favourable operating conditions coupled with an upward trend in prices caused by keen competition in overseas markets."[23] Despite such recent improvements in the world timber price, future prospects are very uncertain. Timber, like the minerals, face the problem of a rapid depletion of known reserves and thus offer little potential for major increases in exports.

The quick survey of the export products reveals that in the period under study, expected rates of growth of exports (ε) were low. Some reasons were offered. Other factors responsible for this deterioration especially after the 1966 coup, were the devaluation of the cedi plus import licence and implicit taxes on these traditional exports.

On July 8, 1967, the cedi was devalued by 42.857 percent. "This was aimed among other things at the restoration of equilibrium in Ghana's balance of payments through stimulating exports and curtailing imports."[24] (emphasis added). This need not necessarily be so, for it is possible to have a devaluation in which some exports and imports are unaffected. And as expected, the results of the devaluation were mixed.[25]

The presence of discretionary trade distortions (for instance, export taxes) prevented the devaluation from affecting domestic prices of exports. Thus, because the export tax changed, as it did in the case of cocoa (the export tax is a residual) the effective devaluation was less than nominal. Furthermore, the elasticity of demand facing the Ghanaian exports may be (and clearly in the case of cocoa) less than infinity. For this reason the national export price rose proportionately less than the devaluation (i.e. 39.979). Lastly, cocoa is not consumed in any significant quantity and consequently local price of this tradeable facing domestic consumers did not rise substantially as a result of the devaluation.

Immediately after the devaluation, the specific timber export tax levies were reduced, resulting in an effective devaluation (44.636 percent) exceeding the nominal. Mineral exports except for diamonds were not subject to an export tax either before or after the devaluation and hence the effective and the nominal devaluation are equal. The effective devaluation for diamond is 56.987 percent. For other commodities of minor importance the response was mixed: zero for bananas and kolanuts and large effective devaluation for sheanuts and coffee.

Putting all the export items together, the weighted average effective devaluation (43.03 percent) was very nearly equal to the normal devaluation. If however, we compare the value of exports of each major item before and after the devaluation, the performance showed only a minor improvement.

There has been a consideration of the prospects for the individual export commodities. We now turn to the general outlook of total exports. Estimation of export earnings in the projection period is likely

to be fraught with uncertainties. Estimates depend on factors which are difficult to predict, such as demand conditions abroad and the competitive position of foreign suppliers. The problem is especially acute since exports are generally concentrated (see Table A4 of the Appendix). A reduction in the export concentration has been an official policy objective.[26] Concentration of exports concerns the extent to which national export earnings are distributed among the total. A high degree of concentration corresponds to a low degree of diversification. This in turn, suggests the possibility of a greater risk of net fluctuation because of the reduced possibility offsetting variations. However as Leith correctly asserts:

> "With an already very low degree of export instability, the cost of diversification in terms of foregone earnings must be weighed against whatever social benefits that are attributable to a decline in export instability." He continues that, "Other sources of instability in the economy may be much more amenable to policy intervention, and at a lower cost."[27]

The policies proposed to promote and diversify exports concern the provision of incentives to encourage the introduction and expansion of the production of new types of export products. Rubber appears the most promising new export possibility. Other possibilities include copra, coconut oil, groundnuts, coffee and perhaps some expansion of fresh and processed fruits. There is also the need to export manufactured and semi-manufactured goods. Manufactured commodities which can be sold competitively in world markets are likely to be quite limited at the present stage of development. So growth of such exports is likely to depend mainly on sales within Africa. And here, the establishment of customs union with other West African countries will be beneficial. So far there seems to be little success with the use made of an export bonus

scheme for a wide range of new or minor products, introduced in 1970.

The second policy is an import substitution strategy. The Ghanaian manufacturing sector in the 1960's grew rapidly under the stimulus of the government import substitution programme. The simplest definition of import substitution is the domestic production of what would otherwise have been imported. We adopt in this paper the definition provided by Chenery. He defines import substitution with reference to the change in the proportion of imports to total supply (i.e. imports plus total domestic output).[28] If domestic production rises faster than imports (i.e. if there is a decline in the ratio of foreign supply to total supply) then import substitution is taking place. Evidence in the Ghanaian situation is provided by Table 1.

Two major reasons can be given for an import substitution programme in Ghana. Import substitution in manufactures has been a prime potential source of structural change in the Ghanaian economy. There has therefore been a direct government policy of setting up "infant industry" protection and other direct subsidies in order to promote industrialization of import substitutes as part of a strategy to increase the economic rate of growth. Secondly, given the imbalance between foreign exchange earnings and import supply requirements, there has been a natural evolution of import replacement because it is thought profitable to redress the inevitable imbalance.

One of the important sets of policy instruments used to promote this import substitution programme has been import tariff and sales-excise tax system. Additional instruments such as import licencing and investment incentives have also been used. The tariffs and domestic indirect taxes

were allowed to affect the prices of both final products and material inputs, and hence the protection afforded domestic producers.[29]

In order to stimulate domestic production in Ghana, a tariff is levied on imports raising the duty-paid price by the amount of the tariff, and allowing domestic production to expand output until its marginal costs equal the duty-paid price. This is illustrated in Figure 1. S is the supply curve, OPw is the world price and under free trade is also the domestic price, yielding domestic production of OQo. A tariff on imports at the rate t raises the domestic price to OPd = OPw (1 + t), and domestic production expands to OQ_1. If domestic production of this commodity employs an importable material input, and a tariff is also imposed on imports of that input, the producers' costs are raised. This is represented by the upward shift of the supply curve in Figure 1 from S to S'. The net stimulus to domestic production is now the tariff less the upward shift in the supply curve, that is, the distance labelled bc in Figure 1. This is a positive net stimulus to domestic production. Another possibility is a negative or zero net stimulus to domestic production. Other types of protection (e.g. sales tax) will shift the supply curve further upwards.

If the net stimulus is expressed as a proportion of the per unit free trade price of output, we have the net rate of protection of output. Consideration of the rate of protection of the primary factors in per unit terms which is the net stimulus as a proportion of the per unit value added, gives us the effective rate of protection of value added.

A recent study by Abban and Leith, has provided some preliminary estimates of the magnitudes of the stimuli afforded the various Ghanaian

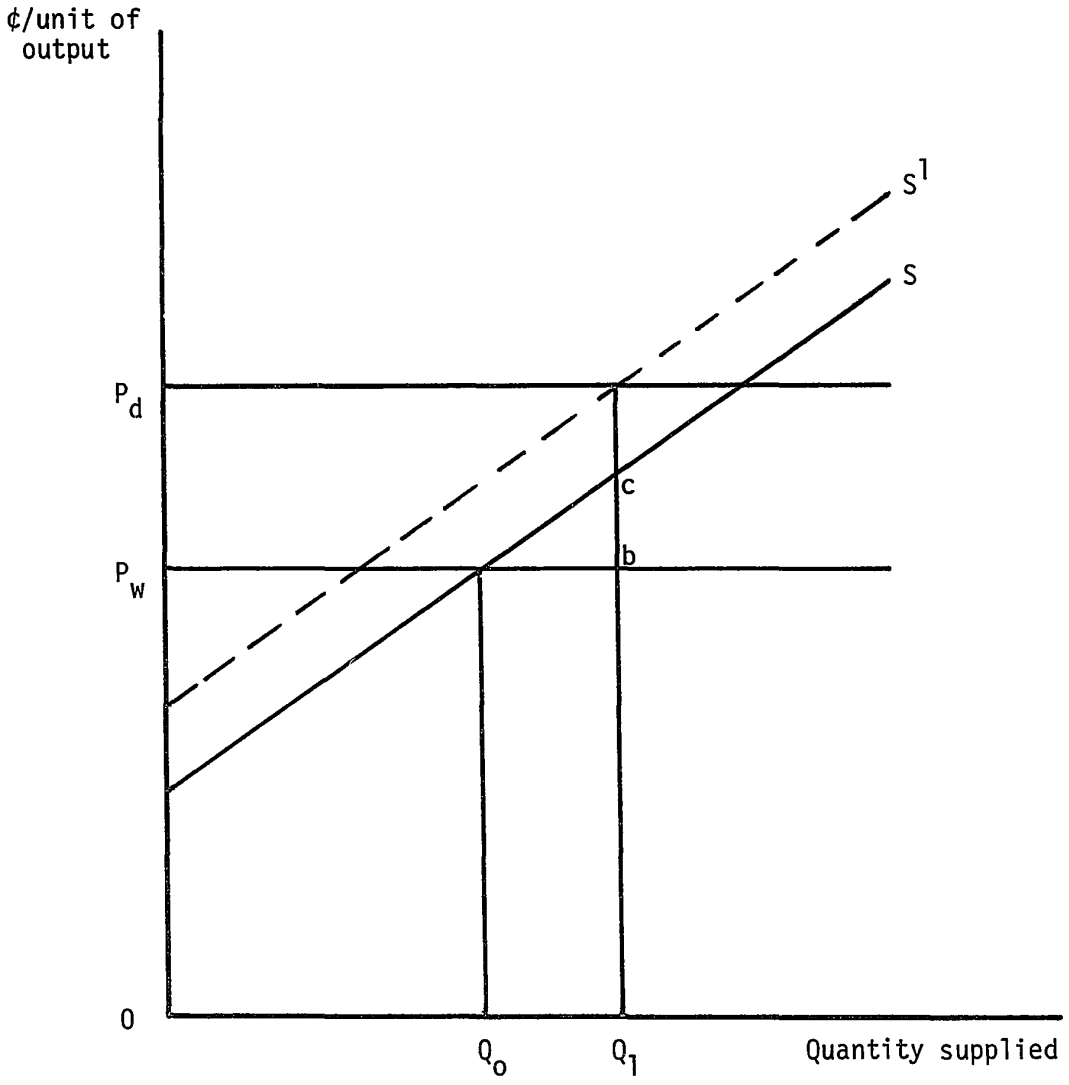


Figure 1: The Effect of Protection on Ghanaian "Import Substitution" Industries.

manufacturing activities by the tariff and indirect tax system for the year 1968.[30] (See Table 20). The table presents a number of cases of negative or near zero rates. Such rates indicate the fact that the taxing effect on inputs exceeds the subsidy effect on output. For these industries there would be more import substitution under free trade than under the present protective structure.

The second category of industries include those with positive rates of effective protection, the rates ranging from low to moderate, high and to very high protection. For some of these industries, protection is substantially less significant while in others there will be less import substitution under free trade. There is the third category of "import substitution" industries with negative value added at world prices. These industries would definitely not exist in the absence of the existing protective structure.

This mixed picture poses the question as to what benefits or costs Ghana has had in its import substitution programme. We first turn to the advantages of import substitution programme[31] in Ghana. Import substitution is believed to save foreign exchange. Consequently protection of import substitution industries is justified because it raises revenue, encourages industrialization and reduces the pressure on the balance of payments of the country. Secondly, competition with technologically advanced countries is avoided by the country by curbing imports and discouraging exports. Import substitution can therefore be seen as a move towards autarchy and economic independence. Import substitution provides new sources for government taxation. However, the prospect of additional revenue in the industrial sector replacing traditional revenue sources allows planners to shift their attention away from the problem of

TABLE 20

PROTECTION OF GHANAIAN "IMPORT SUBSTITUTION" INDUSTRIES, 1968
(ALL RATES IN PERCENT)

Industry	Effective Protection	Net Protection
1. Industries with near zero or negative protection:		
Mattresses	-3	-2
Paints	-3	-1
Plastic products	-44	-39
Aluminium wares	-10	-3
Candles	-1	-0.4
2. Industries with positive rates of protection:		
Knitting	958	112
Fruit and vegetables processing	983	68
Sunglasses	121	25
Radio and T.V. assembly	110	28
Perfumes	84	26
Pharmaceuticals	43	19
Brewery	50	37
Blankets	53	25
Shoes	30	11
Paper products	28	12
Furniture	28	13
Soft drinks	11	8
Towels, Bedsheets, etc.	1	0.5
Nails	22	12
3. Industries with negative value added at world prices		
Confectionary	-4513	90
Distillery	-3544	37
Tobacco leaves	-1050	63
Fixtures	-352	16
Refridgeration machinery	-24	24

Source: Culled from J.B. Abban and J.C. Leith, "Protection of Ghanaian Manufacturing Due to Tariffs and Indirect Taxes," mimeo., University of Ghana, Accra, 1971, Table 1, p. 16.

raising productivity in agriculture. Further, the prospects of larger profits in a modern manufacturing sector lead to saving and investment thereby increasing the productivity of factors employed in that sector. An import substitution drive in Ghana is justified on these reasons and promoted by the sets of policy instruments mentioned above.

This protectionistic development strategy in Ghana has its disadvantages as well. Import tariffs on consumer goods in Ghana have encouraged "finishing touches" industries (e.g. Radio and Television assembly) because these industries require less capital, less skilled manpower and have been in many cases independent of domestic supplied inputs. Hence, the new manufacturing industries often have had relatively little impact upon the country's economy, (i.e. the absence of forward and backward linkages). Secondly, the cost of import substitution may greatly exceed that implied by the difference between protective tariff rates and the foreign price of the goods produced. This case is illustrated by those industries with negative rates of protection.

The protection of import substitution industries has the probable effect of turning the intersectional terms of trade against agriculture, thereby destroying the potential market for manufactured goods. The changing terms of trade also inhibits growth in agriculture because of the increased costs of non-farm-supplied inputs. There are other aspects of the import substitution strategy in Ghana. The magnitude of the import bill has not declined in the process (see Table 1), although the structure of imports has changed as supply has shifted from abroad to domestic production. The factors which tend to initiate import substitution in consumer goods industries have perpetrated that trend. There has been

increasing important substitution and greater controls. Finally the establishment of most industries in the country has suppressed the capacity to export. Protection provided the "infants" has forced domestic costs above the world level causing factors to shift out of export production. That is, the incentive to expand exports is removed because of the penalty rendered on export producers by the deflation of foreign exchange associated with protected import substitution. The process has become self-reinforcing leading to increased import requirements relative to the export capacity and hence chronic balance of payments problems, which continue to be a severe constraint on the development effort of the country.

Besides, the industries which have been established have often been inefficient and have been producing on a small scale. New projects that are to be considered for protection and fiscal concessions should be sufficiently examined to find out the economic benefits and true costs to the economy.

The rates of growth in total imports per annum was about 4.2 percent in the 1960's while the rate of growth in the major export commodity (cocoa) was about 2.4 percent.[32] World trade in cocoa increased by 2.7 percent in the 1950's and by about 4 percent per annum in the 1960's. A projected rate of growth in total exports of around 6 percent is realistic assuming that Ghana maintains its share of world market in cocoa. The target represents some improvement over the past export performance. An improved export performance is a sine qua non for the long-term growth of the Ghanaian economy.

The Import Function

A significant feature of the industrial growth in Ghana in the observation period has been its great dependence on imports of various items. Imports are composed predominantly of manufactured commodities. There is however a large item of food. Other important items include fuel and chemicals.

Major avenues of approach are available in predicting the future level of imports of Ghana. For example, we can decompose total goods imported by economic sectors of destination. Unfortunately, no satisfactory matching between imports and individual sectors of economic activity can be obtained for Ghana. It is difficult to say, for instance, whether a piece of raw steel goes into the manufacturing, mining, construction or transportation sector. The most illuminating approach is a disaggregation of imports by end-use, for which detailed information is available and the percentage of this distribution is given in Table 21. We can thus write:

$$M_t = M_n + M_d + M_r + M_c + M_f$$

There is the need to explain the categories used. Non-durable consumers' goods (M_n) include food, drink, tobacco, clothing and footwear. The main items in durable consumers' goods (M_d) are automobiles and electrical appliances. Raw and semi-finished materials (M_r) - i.e. non-durable producers' materials - include construction materials. Capital equipment (M_c) - i.e. durable producers' materials - includes various types of machinery and equipment and commercial vehicles. The last category is made up of fuels and lubricants (M_f).

For projection purposes consumers' goods imports are taken as

TABLE 21

VALUE OF IMPORTS BY END-USE AS A PERCENTAGE OF TOTAL IMPORTS, 1957-1969

	1957	'58	'59	'60	'61	'62	'63	'64	'65	'66	'67	'68	'69
1. Non-durable Consumers' Goods	47	45	42	41	41	42	33	30	29	27	27	24	25
2. Durable Consumers' Goods	9	10	8	9	8	6	6	4	6	4	6	5	6
3. Raw and Semi-finished Materials	24	25	26	24	28	28	30	34	32	34	38	39	40
4. Capital Equipment	13	14	19	22	19	18	25	27	30	31	23	25	23
5. Fuels and Lubricants	6	7	5	5	4	6	6	6	4	4	6	7	6

Source: C.B.S., Economic Surveys, Accra (various issues).

a function of total national income or product. In the import function for non-durable producers' goods, the value-added in the manufacturing sector can be used as an explanatory variable. Gross domestic fixed capital formation, part of which consists of imported goods, has been taken as an exogenous variable for determining the level of imports of durable producers' goods. Fuels and lubricants are used as inputs in the industrial sector, so the output of this sector, measured in constant prices, would be an appropriate explanatory variable.

One characteristic of the figures shown in Table 21 is the decline in imports of non-durable consumers' goods. For example, there was a drop in the import of drink and footwear as a result of increased domestic output. Durable and non-durable producers' materials, on the other hand, almost doubled in 1969 over their 1957 level. These increased items included imports of agricultural inputs and producers' equipment. These were in line with the government's policies to step up the growth rate in the agricultural sector. And as stated in the One-Year Development Plan, "the objective of the increase in imports was to allow the economy to raise the rate of growth of GDP to 5 percent per annum".[33]

What was done was to ensure that priority sectors received adequate supplies of inputs of capital and imported material. Hence, input subsidies, non-price rationing of the capital market and import licencing system were relied upon to achieve the objective. A subsidy on an input is a two-pronged instrument: it stimulates output and it induces the producer to use the subsidized input relatively more intensively. Capital and foreign exchange become cheap.[34]

Let us assume a situation represented in Figure 2. We require two inputs X (domestic input) and Y (imported input) to produce one unit of output, q. We call X, labour and Y capital. Prices of the inputs and output are known to the producer. In the initial situation one unit of output q_o, is produced at Point Q on Technique A using OX_o of input X and OY_o of input Y. If a subsidy is put on Y, while the price of X remains constant, the imported input Y becomes relatively cheaper and is therefore substituted for X which has now become relatively more expensive. Output is now at Point Q^1 on Technique B, with OX, of labour and OY_1 of capital.

What the analysis shows is that the giving off of subsidies, capital is available to combine with employment of labour but there is misallocation of resources. There is misallocation in the sense that there will be heavy strain on the resources that are under-priced, capital (i.e. there is stimulation of output through intensive use of capital) while part of the resources that are over-priced, labour, will be unemployed.

Since 1960, the major method used to restrict imports was a system of import licencing. For most commodities the binding constraint on imports was the level of import licences issued, not the duty-paid price. Then there was the 42.857 percent devaluation of 1967. This policy was intended to affect the excess demand for foreign exchange.

The available evidence[35] indicates that the effective devaluation varied considerably, the changes in the indexes ranging from 3 percent for imported foods to almost 36 percent for manufactured articles. None of the indexes was equal to the size of the devaluation. The effective devaluation on all imports was 20.24 percent and this was less than half the size of the nominal devaluation. This is a failure on the part of

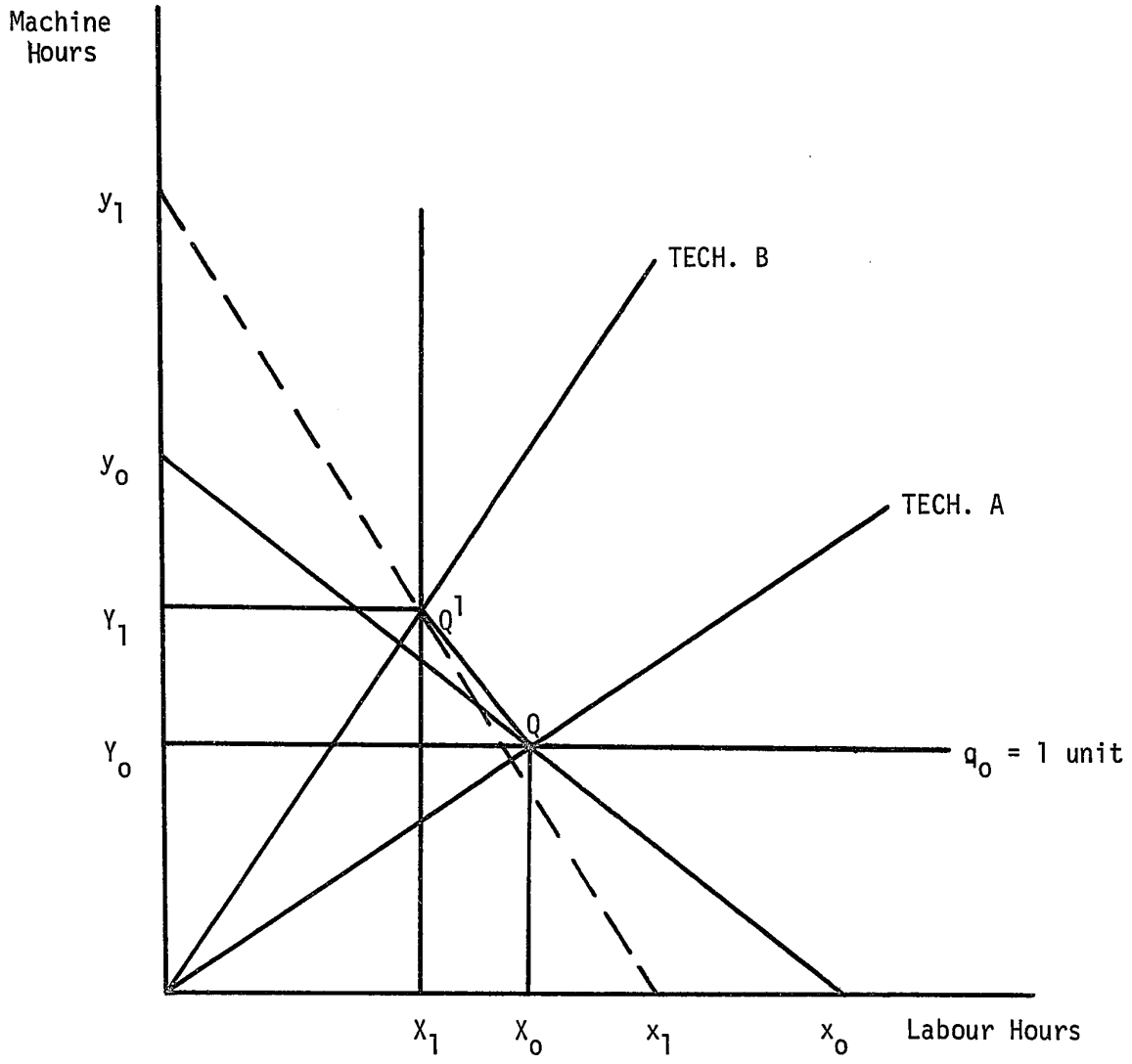


Figure 2: The "Distortion Effects" of Subsidies on Choice of Technique in the Ghanaian Economy*

Note: *Mainly in the modern sector.

the country to engage in a fully effective devaluation of imports. As a consequence, the full effect of the devaluation was not brought to bear on the excess demand for foreign exchange. Comparing the effect of the devaluation on both exports and imports we notice that too much emphasis was given to price elasticities without due consideration of monetary implications involved in devaluation.

On the import side $\bar{M}_t$ (required imports of goods and services) is high because of the import-intensive investment and raw material requirements due to not only the devaluation of the cedi but also due to massive concessions provided to business firms. These firms found it economical to import their input requirement and take advantage of the concessions even though, in some cases, the materials could be supplied from domestic sources.

To control demand for imports and to capture monopoly profits previously earned by licence recipients, a set of surcharges at rates varying from 5 percent to 150 percent of the c.i.f. value was introduced in August 1970. These surcharges were put on commodities imported under Open General Licence (in effect no advance licence was required). The percentage of total imports on O.G.L. was 3 percent in 1967, 17 percent in 1968, 37 percent in 1969 and 57 percent in 1970. The surcharges were applicable to essential food items, spare parts, chemicals, pharmaceuticals and other items. This policy measure meant increased liberalization, started after the 1966 coup, of imports notably of raw materials and spare parts.[36]

Before 1967 shortage of raw materials and spare parts hampered rapid progress generally in nearly all the industry groups while the development of the Timber industry was hit further by lack of capital.[37]

TABLE 22

GROSS OUTPUT AND VALUE ADDED IN GHANAIAN INDUSTRY, 1962-1969, AT 1962 PRICES (¢ MILLIONS)

YEAR	GROSS OUTPUT	VALUE ADDED
1962	122.4	81.2
1963	139.6	89.4
1964	147.1	93.4
1965	149.4	96.6
1966	166.7	113.8
1967	178.1	116.7
1968	204.0	124.4
1969	217.6	121.7

Sources: C.B.S., Economic Survey, 1967 (p. 67) and 1969 (p. 73).

By increasing the availability of imported spare parts and raw materials via the expanded Open General Licence List, domestic producers were able to increase real domestic output. The evidence here is confined to the industrial sector where the annual data suggest a reasonable recovery of value added and gross output in 1968 and 1969 over the stagnation before 1967 (See Table 22).

The annual rate of growth of imports in the past has been around 8.5 percent. Modest plan rates of about 7 percent is likely to be achieved. Imports of capital goods are expected to advance more strongly than total imports; very modest rates of increase of raw materials is expected but a decline in consumer goods is desired. The last measure will be achieved if the strict "Operation Feed Yourself Campaign", introduced by the present National Redemption Council (NRC) government is adhered to. There is the need for the country to satisfy its increasing proportion of domestic requirements from domestic output.

Empirical Estimates of Gaps in the Sample Period

The empirical results of gap estimates for Ghana in the sample period are presented in Table 23. The excess of gross investment over gross domestic savings gives the saving-investment gap (row 3); and the excess of imports of goods and services over exports of goods and services gives the trade gap (row 6). Since these estimates are in ex post sense, the saving gap for each year is equal to the trade gap. One of the variables that enter into the national accounts of Ghana is the net transfer payments (see row 7, Table 23). These payments represent capital shifts, which require financing and is therefore added to the trade gap to obtain the foreign exchange gap (row 8). The savings gap and the trade gap

TABLE 23

SAVINGS GAP, TRADE GAP AND FOREIGN-EXCHANGE GAP

OF GHANA, 1957-1969, AT CURRENT MARKET PRICES

(¢ MILLIONS)

	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
1. Gross Investment	100	108	174	216	190	172	210	246	272	261	219	226	259
2. Gross Domestic Saving	78	138	162	166	108	142	154	210	148	195	184	241	290
3. Saving-Investment Gap*	-22	+30	-12	-50	-82	-30	-56	-36	-124	-66	-35	+15	+31
4. Imports of Goods and Services	214	190	252	296	326	270	290	283	376	285	300	354	394
5. Exports of Goods and Services	192	220	240	246	244	240	234	247	252	219	265	369	425
6. Trade Gap**	-22	+30	-12	-50	-82	-30	-56	-36	-124	-66	-35	+15	+31
7. Net Factor Income from Abroad	-6	-4	-6	-10	-14	-10	-18	-12	-19	-14	-21	-39	-43
8. Foreign-Exchange Gap***	-28	+26	-18	-16	-96	-40	-74	-48	-143	-80	-56	-24	-12

Source: Figures calculated from tables provided in this study.

Notes: * Gross investment less gross domestic savings.
** Imports of goods and services less exports of goods and services.
*** Net transfer payments represent capital shifts, which require financing, and is therefore added to the trade gap to obtain the foreign-exchange gap.

are clearly shown on Charts 1 and 2. These aggregates, the foreign exchange gap and other macro economic variables, have been expressed as ratios to the 1957 (initial period) GNP (see Table A5 of the appendix).

The existence of the trade gap is an indication of deficits on the balance of payments. The principal cause of this deterioration has been an increase in import values, while export receipts remained relatively stable. "The deficits that persisted reflects an excess of domestic demand originating largely in the public sector. A part of this excess demand has been deliberate, representing a preparedness to draw down reserves for purposes of economic development."[38] Killick points out that, "much of the increase in imports in these years (period up to 1961) was of consumer goods, not all of them of an essential nature."[39] The imports of these non-essential (i.e. nondevelopment) goods and services could have been reduced without hampering development. But for most practical purposes it is difficult to identify the type of imports of consumption goods without which development could continue largely undisturbed without political consequences. The export function did not rise as fast as the import function except 1958, 1968 and 1969 when exports showed a surplus over imports.

The trend of investments has had an influence on the behaviour of imports. A rise in investment means an increase in imports. There seems to be a positive correlation between the two functions. This is due to the great reliance of investment programmes on imported capital and inputs. Gross domestic savings have, on the other hand, been moving at an irregular pattern and have always been less than the required investment except 1958, 1968 and 1969.

CHART 1

TRADE GAP OF GHANA, 1957-1969

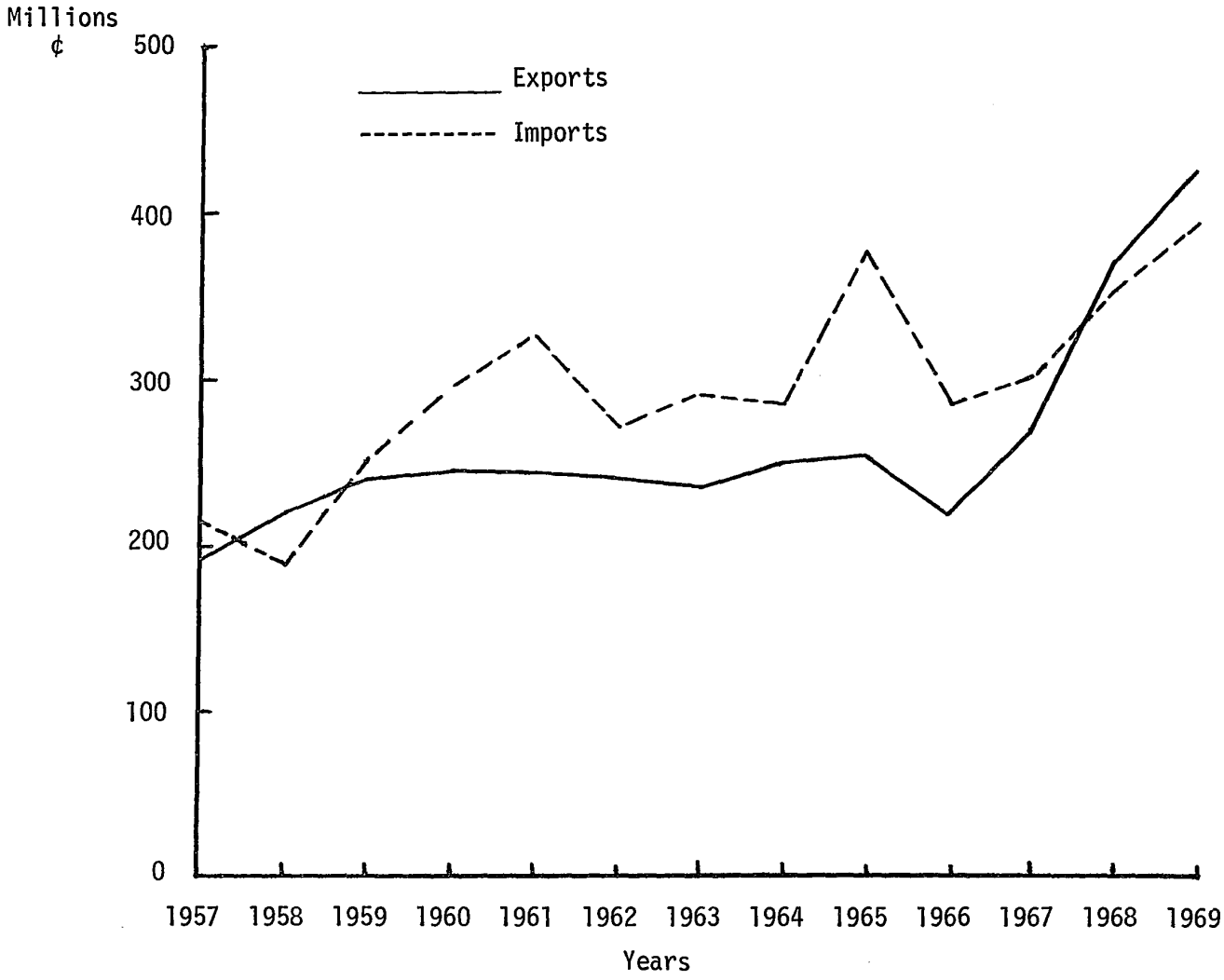
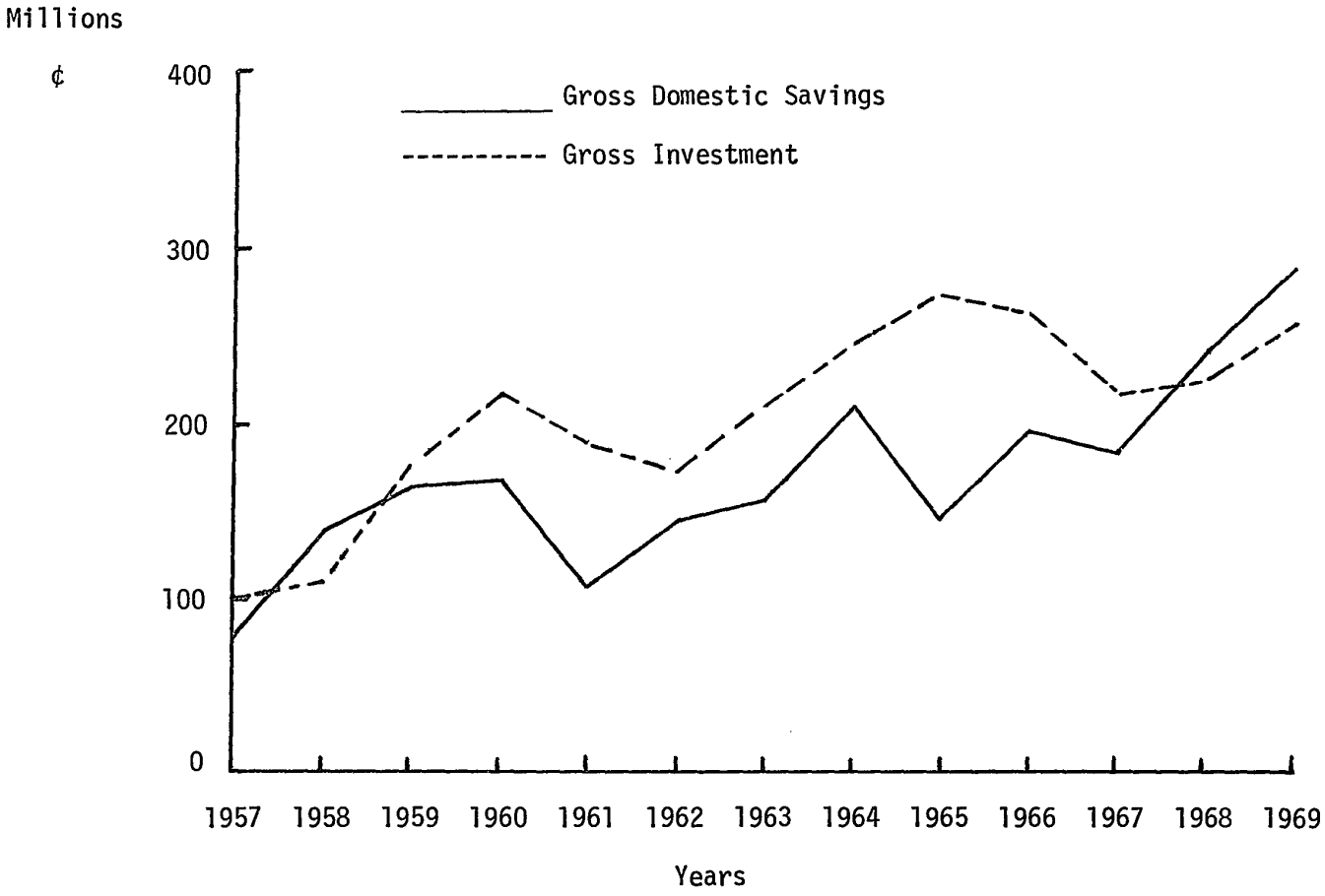


CHART 2

SAVINGS GAP OF GHANA, 1957-1969



Gap Financing

The gaps in the early years of our study were financed by reserves that were accumulated during World War II or in the early post war years. Ghana is among some six less developed countries whose reserves initially were abnormally high.[40] In these early years, the country could tolerate reserve losses over extended periods without feeling constrained to adopt defensive or contractionary policies.

The values of the net position of Ghana's international reserves are shown in Table 24. In 1956, the reserves stood at ¢542.3 million; there was a small decline to ¢424.6 in 1960. The excess foreign assets which existed for much of the earlier periods were exhausted by 1961 and "1962 represented the first year of success for the policy of covering deficits by borrowing from the rest of the world."[41] The drawing down of exceptionally high reserves is also explained by the reserves of the country as a percentage of annual imports. This figure fell from a level of more than 200 percent in 1951 to 28 percent in 1965 as shown below:

GHANA'S RESERVES AS PERCENTAGE OF IMPORTS

1951	'52	'53	'54	'55	'56	'57	'58	'59	'60	'61	'62	'63	'64	'65
209	204	198	258	216	194	160	190	137	107	48	63	35	38	28

Source: IMF, Annual Report 1966, Washington, D.C., Table 2, p. 13.

These external resources not only financed additional imports, but also supported a higher level of capital formation than would otherwise have been possible. After exhausting the country's international reserves, Ghana financed her savings and trade gaps by international savings (capital inflows) and capital aid or gifts.

TABLE 24

VALUE OF GHANA'S INTERNATIONAL RESERVES, 1956-1969
(MILLIONS OF CURRENT ¢)

End of Year	Assets	Liabilities	Net Position	Change in Assets	Change in Net Position
1956			542.3		
1957			490.0		52.3
1958			517.8		27.8
1959			484.5		33.3
1960			424.6		59.9
1961			211.8		212.8
1962			192.6		19.2
1963	156.0	33.6	122.4		70.2
1964	136.5	41.3	95.2	-19.5	27.2
1965	138.2	100.8	37.4	1.7	57.8
1966	135.9	82.5	53.4	-2.3	16.0
1967	106.5	89.1	17.4	-29.4	36.0
1968	117.6	95.4	22.2	11.1	4.8
1969	92.4	73.3	19.1	-25.2	3.1

Sources: 1) 1956 through 1962 supplied by Bank of Ghana.
2) Bank of Ghana, Report of the Board for the Financial Year Ending 30th June 1971, p. 60 for 1963-69.

TABLE 25

GROSS CAPITAL INFLOWS AND RELATED MACRO VARIABLE, 1960-1969

(¢ Million)

YEAR	GNP	OFFICIAL AID	PRIVATE INVESTMENT	GROSS CAPITAL INFLOWS	GROSS CAPITAL % of GNP
	(1)	(2)	(3)	(4)=(2)+(3)	(5)=(4)÷(1)%
1960	946	33.7	8.9	42.6	4.5
1961	1,008	*	*	-	-
1962	1,084	55.4	19.4	74.8	6.9
1963	1,190	32.9	31.8	64.7	5.4
1964	1,345	45.6	28.0	73.6	5.5
1965	1,589	101.7	39.1	140.8	8.9
1966	1,779	55.0	57.2	112.2	6.3
1967	1.757	25.1	36.3	61.4	3.5
1968	2,028	42.9	23.8	66.7	3.3
1969	2,285	53.6	14.7	68.3	2.9

Sources: Col. (1) same as in Table 1.
Cols. (2) and (3) supplied by the Bank of Ghana.

* Data not available

The gross capital inflows (both private and official) into Ghana from 1960 to 1969 are enumerated in Table 25. Private capital inflows fluctuated substantially over the period. The major source of variation is investment by the Volta Aluminium Company (VALCO); it's investments were $23.2, $40.9, $16.9, and $2.6 in 1965, 1966, 1967 and 1968 respectively. Other major categories under private capital include reinvested profits, private suppliers' credits and others such as direct investment.

Official capital inflows are composed of suppliers credits (which have virtually been eliminated: $82.9 in 1965 and $5.6 in 1969); the Organization of Economic Co-operation and Development (OECD) donors; investment by Volta River Authority and others. Official capital inflows also fluctuated over the period. Such inflows, like the private capital, are more sensitive to the exchange rate and the political climate.

Our analysis in the previous section showed the existence of two gaps. The initial solution to the problem was to draw down foreign assets and later to rely on foreign capital inflows. The end result has been the government's external debt which increased from a very small amount of ¢12.7 million at the end of 1960 to ¢494 million at the end of 1969, consisting for the most part of suppliers' credits. The present NRC government has unilaterally embarked upon a selective debt repudiation and has rescheduled others on soft terms. By not touching the debt for 1972 and later years, this substantial hump will remain, but it will give the economy a sufficient breathing space within which adjustments could be made to generate enough income and to increase its ability to pay at a future date. We are here ignoring other unfavourable effects such a policy calls for.

Projections for 1972 and 1975

Projections of the savings, trade and foreign exchange gaps for 1972 and 1975 are given in Table 26. These results are consistent with the assumptions and analysis made in the previous sections, and indicate a rather optimistic rate of growth in the economy.

At the 5 percent rate of growth of Gross National Product, projected investment exceeds gross domestic saving by ¢139.5 million in 1972 and by ¢152.8 million in 1975, whereas a surplus of imports over exports of ¢29.8 million is generated in 1972 and ¢30.9 million in 1975. The increasing amount paid abroad as the net factor income creates a foreign exchange gap of ¢87.8 million in 1972 and ¢81.9 million in 1975.

The projection exercise indicates a dominance of saving-investment gap in the prediction period. This is in line with many other African countries where saving rates have not been rising substantially and have been a constraint on development. It is therefore the projected saving-investment gap that determines the amount of foreign exchange needed to achieve the given target rate of growth of 5 percent of GNP.

The estimates illustrate what should have happened between 1970 and 1972 and what might happen for the next three years under certain specified conditions.

TABLE 26

SAVINGS, TRADE AND FOREIGN-EXCHANGE GAPS

PROJECTIONS FOR GHANA, 1972 AND 1975

(¢ MILLIONS AT 1969* PRICES)

	Historical Coefficient (1957-69)	Projections Based on 5 Percent Rate of Growth of GNP 1969	1972	1975
1. Gross Domestic Product	3.5**	2,328	2,742	3,026
2. Gross National Product	3.3**	2,285	2,684	2,975
3. Gross Domestic Savings		290	351.0	391.7
4. Gross Investment		259	490.5	544.5
5. Savings Gap [= 4.3]		+31	-139.5	-152.8
6. Imports of Goods and Services	3.3**	394	487.0	527.7
7. Exports of Goods and Services	3.6**	425	457.2	496.8
8. Trade Gap [= 6-7]		+31	-29.8	-30.9
9. Net Factor Income Payments		-43	-58	-51
10. Foreign-Exchange Gap [= 8+9]		-12	-87.8	-81.9

Source: Calculations based on data provided in this paper.

Notes: * Exchange rate ¢0.98 : US $1.00
** Compound annual average growth rate (percent).

FOOTNOTES

[1] For some of these factors in less developed countries, see Jean van der Mensbrugghe, "Domestic Savings in Developing Countries," Finance and Development, Vol. 9, No. 1, March 1972, pp. 36-39.

[2] Michael Roemer, "Relative Factor Prices in Ghanaian Manufacturing, 1960-1970," Economic Bulletin of Ghana, n.s., Vol. 1, No. 4, pp. 3-27.

[3] For example, in the corporate sector of the United States during the year 1964, internal sources of retained profit and depreciation amounted to 62 percent of total sources of funds. In absolute terms, these internal sources amounted to slightly more than corporate investment in plant and equipment, which in turn was 49 percent of total net national fixed investment. Data from U.S. President, Economic Report of the President, Washington, D.C., 1965, Appendix: Tables B10 and B68.

[4] Public saving is the difference between gross government receipts and its recurrent expenditures.

[5] One-Year Development Plan, Accra, September 1970, p. 6.

[6] C.B.S., Economic Survey 1967, Accra, 1968, p. 24, para. 85.

[7] C.B.S., Economic Survey 1969, p. 26, para. 84.

[8] Ibid., p. 26, para. 83.

[9] A.G. Nimarko, "A Review of the Tax Structure in Ghana with Respect to Financing Economic Development," Students' Economic Journal, Vol. 1, No. 1, May 1971, pp. 1-9.

[10] The need for such a capital market has been mentioned by J.H. Frimpong-Ansah, "Stock Exchange in Ghana," Quarterly Economic Bulletin, Bank of Ghana, Accra, Vol. 2, No. 3, July-September 1971, pp. 19-23.

[11] For the experience of China and Korea on this issue, see A.G. Chandavarkar, "Interest Rate Policies in Developing Countries," Finance and Development, March 1970.

[12] For a determination of investment behaviour in Keynes model, see J.M. Keynes, The General Theory of Employment, Interest and Money, MacMillian, London, 1970 (edition), Chapter 11.

A double-sided relationship of the type stressed here is found in A. Asimakopulos, "The Determination of Investment in Keynes Model," Canadian Journal of Economics, Vol. 4, No. 3, August 1971, pp. 382-388; Joan Robinson, Essays in the Theory of Economic Growth, MacMillian, London, 1968, pp. 48-51.

[13] See W. Birmingham, I. Neustadt, E.N. Omaboe (eds.), A Study of Contemporary Ghana, Vol. 1, George Allen and Unwin Ltd., London, 1966, p. 137. There were other reviews of salaries and wages during the N.L.C. regime and Busia administration.

[14] For further discussion on the government budget restraint, see C.F. Christ, "A Simple Macroeconomic Model with a Government Budget Restraint," Journal of Political Economy, Vol. 76, No. 1, February 1968, pp. 53-67.

[15] J. Clark Leith, op. cit., Chapter 4, p. 12.

[16] Central Bureau of Statistics, Economic Survey 1969, Accra, 1970, p. 20, para. 74.

[17] Ibid., p. 20, para. 75.

[18] Peter Newman, "Capacity Utilization and Growth", mimeo., Accra, January 3, 1970.

[19] Michael Roemer, op. cit., pp. 12-13.

[20] Economic Survey, 1969, op. cit., p. 62.

[21] F.A.O., Agricultural Commodities - Projections for 1975 and 1985, Vol. 1, Part III, Rome, 1967, p. 241.

[22] C.B.S., Economic Survey 1969, op. cit., p. 74, para. 229.

[23] C.B.S., Economic Survey 1968, op. cit., p. 70, para. 219.

[24] Economic Survey 1967, op. cit., p. 31, para. 99.

[25] For a fuller discussion of the devaluation experience, see J. Clark Leith, "Domestic Prices of Tradeables in a Devaluation: Ghana 1967," mimeo., University of Ghana, 1971.

[26] See T. Killick in W. Birmingham, J. Neustadt, E.N. Omaboe (eds.), op. cit., where he cites the concentration on a few primary products and adds "This pattern of exports must be seen against the desire for diversification that has been official policy over a long period," p. 332.

[27] J. Clark Leith, "Export Concentration and Instability: The Case of Ghana," Economic Bulletin of Ghana, n.s. Vol. 1, No. 1, 1971, pp. 45-54.

[28] H.B. Chenery, "Patterns of Industrial Growth," American Economic Review, Vol. 50, September 1960, p. 640.

[29] The literature on this topic is very extensive but the major work consulted for this paper is: W.M. Cordon, "The Structure of a Tariff System and the Effective Protective Rate," Journal of Political Economy, Vol. 74, No. 3, June 1966, pp. 221-37.

[30] J.B. Abban and J.C. Leith, "Protection of Ghanaian Manufacturing Due to Tariffs and Indirect Taxes," mimeo., University of Ghana, Accra, 1971.

[31] For a discussion of the advantages and disadvantages of an import substitution strategy in developing countries see, P.B. Clark, Planning Import Substitution, North-Holland Publishing Co., Amsterdam, 1970.

[32] U.N., World Economic Survey, 1964, New York, 1965, p. 75, Table 4-3.

[33] op. cit., p. 30.

[34] The opportunity cost of capital in Ghana is supposed to be 15 percent. If capital equipment is allowed to be imported for 5 percent, then there is a subsidy of 200 percent. Also the opportunity cost of foreign exchange is 40 percent above official rate. If capital is imported free then there is a 40 percent subsidy.

[35] See J. Clark Leith, "Domestic Prices of Tradeables in a Devaluation: Ghana: 1967," op. cit.

[36] The liberalization since the January 1972 coup has been over.

[37] Economic Survey 1967, op. cit., p. 77, para. 235

[38] I.M.F., Annual Report 1965, Washington, D.C., p. 92.

[39] T. Killick in W. Birmingham, et al., op. cit., p. 361.

[40] I.M.F., Annual Report 1966, Washington, D.C., Table 2, p. 13.

[41] T. Killick in W. Birmingham, et at., op. cit., p. 361.

CHAPTER 6

SUMMARY AND CONCLUSIONS

We have made an attempt to develop a simple model based on the Chenery-Strout model for Ghana. It was then used to forecast the foreign aid required by the country in the next few years and to show the inter-relations among the main instruments of development policy. Our model is therefore useful both for forecasting and policy analysis.

The empirical results indicate the magnitudes of the saving-investment gap and the trade gap in the sample period. Foreign capital was needed to plug these two gaps and the associated foreign exchange gap. Our estimates for 1972 and 1975 show a dominance of saving-investment gap. The model has indicated the extent to which foreign capital inflows were and are needed to bring welfare to a reasonable level, in a reasonable time and has portrayed the effects of alternative sequences of domestic savings ratios on current and future welfare.

The ex post forecasts for 1970-72 have suggested a more reasonable path of fiscal and monetary policies the government could have adopted than the ones which were actually used. These policy packages are an eye-opener for the remaining years of our projection period. The policy alternatives discussed provide a useful, though by no means complete set of tools useful in prediction and could reduce the scope of errors of policy decisions, and alter the course of the economy to more desired directions. What is suggested is that the model is not adequate in itself as a

completely effective guide for policy formulation, it is still essential in helping us to organize our thinking and in deciding on the appropriate information to collect.

There are some limitations that at this point we see no satisfactory way of overcoming. Specifically, we have no way of confirming the accuracy of our economic data. This is the very basic problem of accurate accounting records. For example, the observed patterns of some of the variables, especially private savings, cast some doubt about the accuracy of the data. The data need to be revised, improved and brought up to date. This will be a step further in making our model very accurate for future ex ante predictions.

The model projects Ghana's demand for foreign aid without any consideration of how the resources are supplied. This is a partial analysis. There is the need to explore the future supply of aid to the country. From this point, the work could be carried further to consider patterns of capital inflow over a long period to show the welfare implications of alternative strategies of aid and growth rather than the five-year optimization considered in this paper.

Ghana's economy is still a changing one and further changes in governments will affect its structure greatly. The country has great prospects and potential. What is required now is an efficient leadership. The structural relations in our model are characteristic of developing economies in which foreign capital inflows and trade play a significant role and this general projection is therefore considered to be applicable to a considerable range of countries with limited number of adaptations.

Although two gap disequilibrium seems in theory to be inevitable,

it remains to be seen whether the Ghanaian economists will have greater success in helping the government to avoid it. Continuing reliance on foreign capital inflows to fill gaps is inadequate. More comprehensive policy mixes are needed to secure the needed redirection of resources. Until this is achieved, there will exist a rationale for the use of two gap thinking not only in the Ghanaian context, but in many other developing countries.

APPENDIX A

STATISTICAL APPENDIX

TABLE A1

THE GEOGRAPHICAL ORIGIN OF GHANA'S IMPORTS, 1961 - 1969

	Percentage of total imports 1961-1963	1964-1966	1967-1969
1. United Kingdom	34	27	28
2. Rest of Sterling Area	5	4	6
3. E.E.C. Countries	24	22	21
4. Dollar Areas	10	13	20
5. Communist Countries	8	19	8
6. Other	19	15	17
TOTAL	100	100	100

Source: C.B.S., Economic Survey, Accra (various issues)

TABLE A2

GHANA: COMPOSITION OF PRIVATE CONSUMPTION EXPENDITURE, 1960-1969, AT CURRENT MARKET PRICES
(¢ MILLION)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
1. Local food	288	338	377	452	527	716	835	733	828	944
2. Imported food	40	50	52	46	52	45	53	47	51	56
3. Beverages and tobacco	35	42	40	46	44	40	53	57	59	60
4. Clothing and other textiles	114	134	114	106	94	150	91	96	123	131
5. Other non-durable goods	30	32	32	32	26	30	30	31	38	50
6. Durable goods	22	28	22	26	16	32	19	25	31	36
7. Rent, fuel and light	66	72	75	82	86	90	97	113	136	140
8. Transport and communications	32	34	36	40	44	42	47	50	52	58
9. Miscellaneous items	66	74	82	86	98	110	112	134	145	151
Private Consumption Expenditure	693	804	830	916	987	1,255	1,337	1,286	1,463	1,626

Source: C.B.S., Economic Survey, 1967, 1969.

TABLE A3

CENTRAL GOVERNMENT REVENUE IN GHANA BY SOURCE

1962 - 1969

Percentages

	1962	1963	1964	1965	1966	1967	1968	1969
1. Taxes on Production and Expenditure								
Export duties on cocoa	16.4	17.2	11.7	7.0	6.6	13.7	23.4	29.5
Import duties	39.7	40.1	27.1	37.8	32.7	26.2	18.9	18.1
Internal duties	11.1	13.9	11.5	22.7	26.3	25.3	24.1	22.1
2. Income Taxes	16.2	13.1	22.6	20.7	23.7	20.8	20.9	20.5
3. Other	16.6	15.7	27.1	11.8	10.7	14.0	12.7	9.8
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: C.B.S., Economic Survey 1969, Accra 1970, p. 109, Table III.

TABLE A4

DESTINATION OF GHANA'S EXPORTS

1961 - 1969

	Percentage of Total Exports 1961-1963	1964-1966	1967-1969
1. United Kingdom	29	23	28
2. Rest of Sterling Area	4	3	4
3. E. E. C. Countries	30	26	24
4. Dollar Areas	20	20	20
5. Communist Countries	14	18	15
6. Other	3	10	9
Total	100	100	100

Source: C. B. S., Economic Survey, Accra (various issues).

TABLE A5

VALUES OF MACRO ECONOMIC AGGREGATES OF GHANA (1957-1969)
EXPRESSED AS RATIOS TO THE GNP OF 1957

	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
1. Private Consumption	.812	.779	.886	.946	1.095	1.131	1.248	1.345	1.710	1.822	1.752	1.993	2.215
2. Government Consumption	.090	.095	.106	.131	.150	.166	.188	.218	.279	.356	.420	.495	.561
3. Total Consumption	.902	.874	.992	1.077	1.245	1.297	1.436	1.563	1.989	2.178	2.172	2.488	2.776
4. Gross National Product	1.000	1.057	1.204	1.289	1.373	1.477	1.621	1.832	2.165	2.424	2.394	2.763	3.113
5. Gross Domestic Savings	.106	.188	.221	.226	.147	.193	.210	.286	.202	.266	.251	.328	.395
6. Gross Investment	.136	.147	.237	.294	.259	.234	.286	.355	.371	.356	.298	.308	.353
7. Savings Gap	-.030	+.041	-.016	-.068	-.112	-.041	-.076	-.049	-.169	-.090	-.048	+.020	+.042
8. Exports	.262	.300	.327	.335	.332	.327	.319	.337	.343	.298	.361	.503	.579
9. Imports	.292	.259	.343	.403	.444	.368	.395	.386	.512	.388	.409	.482	.537
10. Trade Gap	-.030	+.041	-.016	-.068	-.112	-.041	-.076	-.049	-.169	-.090	-.048	+.020	+.042
11. Net Factor Income from Abroad	-.008	-.005	-.008	-.014	-.019	-.013	-.025	-.016	-.026	-.019	-.028	-.053	-.058
12. Foreign-Exchange Gap	-.038	+.036	-.024	-.082	-.131	-.054	-.101	-.065	-.195	-.109	-.076	-.033	-.016

Source: Calculated from data provided in this paper.

APPENDIX B

A General Note

The principle which was used in assembling the data for this paper was to assume that the latest published figures were superior to earlier publications. We, however, warn that all economic data are subject to errors, which are sometimes severe, and that some tables will not add up perfectly because of rounding errors.

The major sources of our annual data are the Central Bureau of Statistics, Economic Survey (various issues), and Macroeconomic Data of Ghana (mimeo) compiled by T.M. Brown. Other sources of the data are indicated at the appropriate sections in this study.

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