External Public Debt
A Case Study of Ghana

by

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ABSTRACT

This study was conducted to determine the nature of the causes of excessive accumulations of external public debt in Ghana between 1960 and 1974.

The original hypothesis was that an inflow of foreign capital reduced the domestic savings capacity, thereby, reducing the ability to repay, and increasing the need to borrow and accumulate additional debt. The regression equation used described savings as a function of capital inflows and gross national product. The result was that capital inflows had a significantly positive impact on domestic savings, and, therefore, did not increase the tendency toward excessive debt.

The final hypothesis was that the use of foreign resources to finance the trade and the savings gaps, and the poor performance of productivity combined to contribute significantly to the accumulation of debt. The regression equation used described debt as a function of the financing of the trade and savings gaps, and the poor performance of productivity. The results showed that the financing of the trade gap without a consequent increase in productivity was largely responsible for the excessive accumulation of debt.

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INTRODUCTION

It was under the leadership of Kwame Nkrumah that Ghana, located on coastal West Africa, shed its colonial status. On March 6, 1957, independence was won and Britain's Gold Coast became independent Ghana. Attempts to develop the new nation began in 1957, but over the succeeding years few accomplishments would be made with regard to development.

The excessive levels of externally owed debt in most developing countries represents an increasingly troublesome element of development and the mechanisms through which it is financed. The causes and effects of excessive debt are pervasive. Cheryl Payer captures the essence of the causes and effects in the following quote:

"...nations...cannot spend more than they earn without falling into debt, and a heavy debt burden bars the way to autonomous action. This is particularly true when one's creditors are also one's customers, suppliers and employers."(1)

The purpose of this essay is to determine, as best as possible, some of the reasons for excessive debt growth in Ghana between 1960 and 1974. 1960 to 1974 is important because it was this period which saw the inception of the problem as it exists today. The hypothesis I have developed with regard to the causes is as follows; throughout the period under study, there was little or no relative growth in national savings, export earnings or productive capacity.

2.
The consequent saving and trade gaps significantly increased the need to borrow external finances. It was hoped, that to the degree the external finances received to help close the gaps could be channelled toward development investment, that the productive capacity of the economy could be expanded. Borrowing from abroad meant undertaking debt liabilities, and to the degree that the productive capacity did not increase sufficiently to allow repayment and movement in the direction of autonomous development financing, it can be said the financing of the gaps through the use of external finances, without a consequent development of productive capacity contributed, significantly, to the accumulation of debt. The lack of significant expansion of productive capacity was due in large part to the nature of the projects invested in. Development investment was channelled primarily into slow and low economic return social and public service projects such as infrastructure, and many unsuccessful directly productive agricultural and industrial projects. Though helpful for long run growth and development, these types of investments were inappropriate considering the required expansion of productive capacity in the short run. The planned level of productivity could not be realized given economic returns experienced by the types of development investments made.
Part One includes; (1) framework which describes the theoretical role played by foreign aid, the theoretical problems that may develop and give rise to excessive growth in debt controlled largely by entities outside of the economy; and (2) a description of the setting in which the debt problem initially evolved.

Part Two includes (1) statement of the major hypothesis and (2) mathematical calculations supporting the hypothesis.

Part Three includes some important policy and planning issues I have discovered, and the conclusions.
Part I
Theoretical Framework

A developing country may have one of several constraints on its capacity to develop and grow. One such constraint is a savings gap defined as "...the inability...to raise the rate of savings quickly...". Another constraint is a trade gap defined as "...the inability to import all the goods and services needed because of shortages of foreign exchange." (1)

Both gaps can be thought of as 'capital requirements' estimates; the savings gap representing the difference between investment and savings and the amount by which savings must be supplemented in order to carry out investment plans; the trade gap representing the difference between exports and imports and the amount of foreign exchange needed to supplement export earnings in order to attain a required level of imports. E. K. Hawkins states that the significance of one of these gaps being larger than the other is that the larger gap represents the "dominant gap" constraint on development.

The gap theory also indicates that in the initial stages of development, it is generally the trade gap that operates as the major constraint because of the limited structure of production relative to development needs. The gap generally consists of a surplus of domestically produced goods which cannot be applied directly to investment and

a deficit of those investment goods, or intermediate goods which are not produced locally. The economy is, then, required to import from abroad the goods and services required for development. The trade gap, operating as a major development constraint, is financed by external aid when the domestic economy cannot generate the required levels of foreign exchange from its export sector. This was precisely Ghana's situation during the late 1950's as it embarked upon its development plans. By early 1960's, however, the savings gap became the dominant gap constraint in Ghana's attempt to develop. (Refer to Table 6)

The third constraint, absorptive capacity is defined as "...the inability of the economy to expand both the quantity and the quality of capacity of output in response to the application of additional inputs." The role of foreign aid (defined as publically guaranteed loans and credits and does not include direct investment) is to bridge the gaps, thus helping to increase the absorptive and productive capacity of the economy. By affecting permanent changes in the structure of the economy such that standards of living improve and dependence on external sources of finance diminish, the developing economy closes its gaps, expands productive output, increases national income, increases national savings, repays the loans, evolves to a level of

development largely financed with domestic resources and becomes a lender in its own right.

To the extent that the country receives aid in the form of loans and credits rather than grants, the burden of servicing the debt may become increasingly problematic in the balance of payments. It is, therefore, important to employ the borrowed resources in a manner which will yield a return at least as high as their interest and amortization costs, and to raise them in a payment form acceptable to the lender, i.e., foreign exchange. A major obstacle to the successful transition from net borrower to net lender is failure to employ the borrowed resources in the most productive manner. Consequently, the gaps, and the debts they represent, remain over time.

Setting

The general policy structure of development plans evolved from heavy levels of public sector investment in social, physical and economic infrastructure during pre-independence days to heavier investment in state owned industrial and agricultural enterprises during the early post independence days. In other words, the evolution was from heavy investment in low economic return projects to projects expected to reap higher economic return.

**Guggisberg Ten Year Development Plan** (1920-1930)

Development policy around which this plan was structured around the expansion of the social,
physical and economic infrastructural bases considered to be important for development of the export sector and free trade. Public sector funds were channelled into the development of railways, roads, water supplies, harbours, dams, drainage, communications, maps, surveys, research and agriculture. Social services such as health and education also received significant levels of public sector investments.

The world depression and the outbreak of war cut the plan short (1927), but by then, half of the originally scheduled funds had been invested and substantial contributions had been made to the infrastructural base of the colony.

In 1929, the Colonial Development Act was set up as a conscious policy of economic development for all Great Britain colonies, including Ghana. Though alleged that the policy was meant to secure the welfare of the colonies, it is more likely that the Act was a mechanism set in place to help solve economic problems in Britain by making the colonies serve as trading outposts of Great Britain.

Development planning meant that "...opportunities were... created only for the production of raw materials and foodstuffs which were important to the developed countries while the colony was regarded as a market for the colonizing country's own exports."

(1) Thomas, J., Hansard, 7/29/29
Under the policy guidance of the 1929 Act, little changed with regard to Britain's development policy for Ghana. Between 1930 and 1945, the development budget was maintained at cut level, but the funds invested were still highly concentrated on infrastructure required to enhance the export sector and encourage free trade. Throughout the period, no long term development program was planned or implemented.

In 1945, a Colonial Development and Welfare Act was passed to replace the 1929 Act.

**Ten Year Development Plan (1946-1956)**

This plan was developed under the policy guidance of the 1945 Act. The policy structure had not changed; development of the social, physical and economic infrastructure. The plan lasted only one year and was essentially ineffectual.

Throughout the 1940's, there was a general discontent among the Ghanian masses that created the circumstances that led to the gradual transferal of political power from expatriates to Ghanians in the 50's.

When Nkrumah became Prime Minister in 1951, his most important and popular policy was the reduction of 'economic dependence' through accelerated industrialization and an expanded role of the state. Development policies formed during his administration were inspired by a vision of economic modernization via a 'big push' involving "...a major investment effort, a strategy centered around an
industrialization drive, emphasizing import substitution, structural change and a less open economy, to be achieved largely by the instrumentalities of the state." (1)

Despite these espoused views on the policy structure development, it wasn't until the Seven Year Plan was implemented, in 1964, that the policy was actually put into action. Between 1950 and 1964, development policy was still centered around the improvement of the infrastructural base. This was primarily because Nkrumah was advised to postpone investment into directly productive industrial and agricultural ventures, and to encourage foreign private funds to those sectors by continuing to invest public funds in infrastructure projects thus creating incentives for foreign investors. In the Ten and Five Year Development Plans implemented prior to 1964, substantial public sector funds were, therefore, channelled to infrastructure projects. Nkrumah was unsatisfied with the response of foreign private investors to the incentives provided and decided that Ghana should undertake development of the directly productive sectors herself, hence, the attempts to develop state owned industrial and agricultural enterprises in the Seven Year Plan.

In describing the circumstances under which the debt accumulated, it is important to understand the nature of the development plans implemented just prior to the inception of the debt problem because it was in the pursuit of the goals and objectives of the plans that Ghana evolved to its indebted position. Between 1951 and 1962, implementation began on four development plans in Ghana, none of which were completed.

Upon examination of the development plans, two important characteristics are apparent. One is that Ghana's dependence on foreign aid to finance its development plans increased over time, particularly with the implementation of the Seven Year Plan. The second characteristic is the consistently high percentage of public sector finances (supplemented increasingly with foreign resources) channeled to infrastructure projects which tended to reap low economic returns. It was not until the Seven Year Plan was implemented that the emphasis of public sector finances on infrastructure and other public and social services shifted significantly to investment in agriculture and industry, the faster and more highly productive sector in terms of economic returns. The combination of heavy investment in projects which experienced low levels of economic return, and the increasing use of external finances requiring quick repayment is largely responsible for the accumulation of excessive debt in Ghana during the period under study.
Ten Year Plan (1951-1952)

This plan was a response by the colonial government to popular demands ranging from more and better public and social service provision to major economic reforms and political autonomy. The basic premise of the plan was that infrastructural development was highly correlated to agricultural and industrial development. It was planned that substantial public sector investment in public and social services would act as an incentive to attract domestic and foreign private investment to develop the agricultural and industrial sectors.

Forty percent of total public investment in the plan went to communications and infrastructure; 33% went to social services; 15% went to common services and general government administration, and, 12% went to agriculture and industry.

Sixty-two percent of the plan was to be financed from Ghana's own resources; (35%) from export duties, (17%) from the recurrent budget, and (10%) from the Cocoa Marketing Board. The remaining 38% was to be financed by external borrowing (33%) and British aid funds (5%). Despite the heavy reliance on external funds to finance the plan, the government did have substantial reserves from which to draw should external finances not be forthcoming, and hence represented the significant potential Ghana had to be independent and autonomous in financing its development.
Revised Ten Year Plan (1952-1958)

Upon taking office as Prime Minister, Nkrumah revised the Ten Year Plan. The revised plan was not significantly different from the first plan. Development policy was still based on massive public investment in infrastructure, social, and public services, and agricultural and industrial support services, in general, the framework expected to attract private investment to the industrial and agricultural sectors.

Forty percent of public sector funds were invested in infrastructure and telecommunications, 25% to general government, administration, 21% to social services and 8% to agriculture and industry.

Eighty-three percent of the plan budget was to be financed by Ghana's own resources; (61%) from export duties, (16%) from the recurrent budget, and (6%) from Cocoa Marketing Board reserves. The remaining 17% was to be financed by borrowing from abroad (15%) and locally (2%). The revised plan reduced the dependence on external funds by 50%.

Five Year Plan (1959-1964)

In an effort to speed up the development process enormous amounts of public sector finances were invested in the same types of projects most heavily invested in in the first two plans, social and public services and agricultural and industrial advisory and support service. It was assumed that the faster this could be done, the faster it could be expected that private funds would be attracted to developing
the more productive sectors, i.e., agriculture and industry. Thirty-one percent of total public investment went to public services, 30% to social service, 19% to general government administration, 12% to industry and 8% to agriculture.

Eighty percent of this plan was to be financed by domestic resources from the recurrent budget and the accumulated reserves. The remaining 20% was to be financed by external borrowing. The Five Year Plan committed Ghana to a heavy reliance on high levels of public spending which, given the types of projects most heavily invested in, eventually could be sustained only by an increasing reliance on external capital, and by 1961 Ghana experienced a balance of payments crisis.

Each year between 1959 and 1961 budget deficits in current account were recorded. The high import content of investments and the high propensity to import out of marginal additions to income resulted in an increase of the import bill at a rate faster than the increase of export earnings. The balance of payments on current account turned from a surplus level in 1959 to a significant deficit by 1961. Government reserves fell and foreign reserves fell at greater rates. The experience resulted in a development policy shift from heavy investment emphasis on infrastructure to heavy investment emphasis on directly productive agriculture and industry under policies of import substitution and export promotion in a new development plan.
Seven Year Plan (1964-1970)

The implementation of the Seven Year Plan brought about two major shifts; the large scale development of state owned agricultural and industrial enterprises; and a heavier dependence on foreign capital. Domestic public spending on infrastructural services continued to grow. Investment in the state-owned industrial and agricultural enterprises was achieved primarily through the securing of medium term supplier's and contractor's credits.

Thirty-nine percent of total public investment was planned for the agriculture and manufacturing sectors, 28% for social services, 27% for public services and 5% for general government administration. Fifty percent of the capital allocated to agriculture and 75% of capital allocated to industry were invested in state enterprises.

Fifty percent of the investment finances were expected to come from external borrowing, 24% from Central Bank and/or deficit financing, 21% from the recurrent budget and 5% from domestic loans.

Between 1959 and 1965, some important changes took place in the debt position of the central government. (Refer to Tables 1-3.) The level of total public debt in 1965 was almost twenty times the 1959 level. The percentage of external debt in total debt rose from 26% in 1959 to 52% in 1965. The percentage of supplier's credit in total external debt rose from 14% in 1959 to a peak of 86% in 1963 and declined to 79% in 1965. The increase in credits were
due largely to the financing needs of the Seven Year Plan.

Supplier's and contractor's credit was undoubtedly the largest single and most notorious element of the external debt obligations. Credits encouraged expansion of the development investment portfolio well beyond what could have been possible if only domestic resources had been used, but well beyond the capacity of the economy to plan and execute the projects thoroughly and efficiently.

Of the credits received (70-75% of total contracted) about 30% went to agricultural and industrial enterprises and about 70% went to other sectors, particularly infrastructure, other construction projects and purchase of transport equipment. All the credits were made to the government or to public corporations and therefore had an implicit Ghana government guarantee.

The fact that debt accumulated significantly with the acceptance of supplier's credit, was the result of the lack of productive output arising from the credit financed projects of the Seven Year Plan. There were many problems that helped to stifle the expected growth in productive output.

(1) Inappropriateness of terms - Ghana's debt to creditors accumulated in large part due to the acceptance of credits on terms unsuitable for the projects they financed. Most of the projects invested in could not have generated the income or savings in foreign exchange within or soon after the designated repayment period. This was particularly
true to the degree that credit was used to finance infrastructure and similar type projects and unsuccessful enterprises.

(2) Inadequate planning - Additionally, the problem was complicated by inept planning and execution of the projects with consequent delays. Few of the delays were taken into account in the scheduling of the repayments. Making payments on schedule was virtually impossible.

Credits also encouraged bad planning and management by encouraging overspending and reduced economic/financial discipline - almost half of the credit financed projects were not planned to be implemented until the credit was offered. These unplanned projects did not replace originally planned projects, but were additions to the planned stock. This forced the government to resort to short term expedients such as deficient financing and short term borrowing to finance planned projects, which aggravated the debt problem.

(3) Corruption - Corruption was a very widespread problem with regard to the credits. Overcharging was common and in the end resulted in Ghana's receipt of only 70-75% of the total face value of the credits contracted and received.

Most of the projects were not subject to competitive bidding which would have created a tendency toward lower costs and increased quality; Ghana generally lacked the expertise and manpower needed to make detailed checks of contracts and equipment, machinery, etc. upon receipt; the
administrative muddle, political pressure on officials and outright dishonesty of independent "consultants" created circumstances ripe for overcharging. Second hand, obsolete and defective equipment was supplied at the contract price of new and current supplies; work (for example, feasibility studies and training programs) contracted wasn't completed or done in a perfunctory manner.

State enterprises aside, there were many credit financed projects that were unnecessarily expensive and lavish. They included projects such as a Russian atomic reactor and an Ilyushin aircraft; a French built Tema hotel and Accra airport terminal; the British Accra-Tema Highway, VC-10 aircraft and naval frigate; the equipment and construction services from various sources, for the Trade Fair complex, the OAU conference building, the Nkrumah Ideological Institute and the Takoradi and Kumasi hotels. Those items represent about 28% of the credits received none of which can be said to have contributed to the productive output of the economy.

In considering the credit financed state enterprises, the lack of sufficient productive output stemmed from varied problems. Both domestic and foreign misuse of resources adversely affected the output of the enterprises. State enterprises had a heavy reliance on foreign consultants, contractors and suppliers in the identifying, planning, implementation and managing of the projects. The help provided, however, was generally of low standard; overall
performance was marred by shoddy work, incompetence, inefficiency and irresponsibility. This type of external intervention merely complicated an already problem ridden Ghanian administration, thus adding to the sorry circumstances experienced by the credit financed state enterprises. Several examples will help to illuminate the problems that resulted in low productivity of state enterprises.

Ghana had been led to believe that it could reduce its import bill by constructing a textile mill. The French offered Ghana what they called ultra modern machinery. Ghana received from France 500 looms whose production in France was discontinued when mechanical defects were discovered in them. In the end, Ghana was trapped with expensive and faulty machinery which created constant snags in the production process and required expatriate management—at a price—to keep the mill in operation at less than half capacity.

In an attempt to expand export earnings, Ghana elected to process, for export, part of its cocoa product. A German company, anxious to sell plant and equipment, helped to establish two new cocoa processing factories. Plans for one of the factories was extended before any work was done to 4 times its original capacity and almost four times its original cost. The new proposal was to include an entire complex capable of processing 200,000 tons of cocoa annually into a variety of cocoa products. By the coup in 1966, only the cocoa silos and chocolate factory had been completed and Ghana had paid 50% of the total cost of the entire
19. project, (in down payment and debt service) more than the cost of the work that had been carried out. Major design faults rendered the silos useless for their intended purpose (cocoa storage) and the factory could operate only at a loss and served only the small domestic market. Throughout the process, the behavior of the contractors was evasive; they refused to give any specifications of plant or equipment, to allow inspection of machinery or to supply the manufacturer's name before completion.

A shoe factory constructed by the Czechs had several problems. The object was to substitute domestic production for a rapidly rising import bill for shoes. The Czechs, as the primary exporter of shoes to Ghana, were asked, in 1961 to design a shoe factory. The hide from cattle processed in the Bolgatanga meat factory would supply the Czech tannery which would in turn provide the main input for the shoe factory at Kumasi (Ghana). When the factory was completed in 1967, it became apparent that the earlier phases of the production chain had gone wrong, consequently, the factory was forced to indefinitely rely on imported leather. The Czechs had estimated a 10% rate of return, but it turned out that the initial capital outlay was at least 50% too large to expect such a return. The factory plans included expensive provisions for workshops, an office block, recreation facilities, canteens and other non-essentials, which the Czechs insisted on as a part of a 'new deal for labor', but which they themselves weren't
financing. In the end, the additional amenities ruined the project. The contract for construction of the additional elements was given to a British firm, which had to withdraw from work in progress as the required credit could not be raised in Britain. This, and other delays, allowed six years to lapse between the original agreement and actual production. In the interim, the shoemaking technology and shoe styles had changed enough so that the factory's output became dated. Additionally, three private shoe factories came into production at about the same time as the state factory, but produced cheaper and more fashionable shoes, leaving the state's factory's first six months output unsold.

Yugoslav credits were received to build canning factories that the Yugoslavs claimed would experience rates of return between 15% and 20%. This calculation was based on the assumption that the raw materials would be available locally and that there would be a ready market in and around Ghana. No feasibility studies or market research had been carried out to test these assumptions. Later estimates indicate that the raw materials (fruit) available for canning were only a fraction -10%-50%- of what was required to achieve the planned for return rate. Also, the bulk of the demand for the products at the planned for rate of return would have come from outside Ghana.

The massive use of credit to finance infrastructure and other construction projects and unsuccessful state enterprises was the single largest contributor to Ghana's
debt problem. Infrastructure is traditionally unproductive and the failure of the state enterprises to expand productive output made the repayment of the credits virtually impossible.

Ghana received credits from private Western suppliers and from Eastern governments. The peak period of credits from the West (representing 75% of the total credit obligation) was between 1963-1964. The peak period for credits from the East was between 1962-1963.

The terms of the credits received from the West were commercial rather than concessional (For political reasons, Ghana was unable to attract concessional loans from the West.) The maturities averaged between 5-8 years and the interest rates 5-6%. Eastern credits tended to be softer with 12 year maturities and 2-3% interest rates. The repayment terms of the credits required substantial investment in highly and quickly productive projects which, as stated earlier, did not occur. Had credit financed projects been able to contribute to output and revenue quickly, the strain of repayment would have been significantly lessened. However, the credits were not used in the most productive manner and were often subject to corruption and graft.

By 1965, most of the credits were beginning to fall due. By 1966, the debt burden, largely caused by inability to repay credits had grown so great, that it became clear that Ghana would not be able to honor its contractual obligations. In December 1966, under the prescribed
stabilization plan of the IMF, Ghana rescheduled her debt payments. Eighty percent of the interest and principal due was consolidated over a 2-1/2 year period, followed by a 2-1/2 year grace period with a bilaterally arranged moratorium interest averaging around 6%.

Part of the IMF package, as a condition for the receipt of standby credit, included the devaluation of the Ghanian cedi. The devaluation resulted in a 31% increase in the nominal external debt burden (Table 2).

Despite the rescheduling, external debt continued to bear heavily on the economy and development efforts, the major problem being the repayment of medium term credit.

In 1968 another rescheduling took place. The agreement reached was similar to the 1966 agreement with the following exceptions: a 3-1/2 year consolidation period followed by a two and a half year grace period and a 7-1/2 year repayment period. The combined moratorium interest due from both reschedulings substantially increased the debt. Estimates of the percentage of the increase of external debt due to the institution of the moratorium interest increase vary from 20-45%.

In 1969, a much harder line was taken in the negotiations with creditors. Easier repayment terms such as the dissolution of the moratorium and contractual interest

(1) Cheryl Payer estimates that the increase in external debt due to the moratorium interest was 45% of the original debt obligation; Douglas Rimmer writing for Africa South of the Sahara estimates a 20% increase.
and longer range settlement to facilitate planning were requested. Proposals that the credits be refinanced with official loans on softer terms so that any surplus foreign exchange earnings could be used to finance development rather than debt repayment were made, but to no avail. Debt repayment continued to exert pressure on the economy and development efforts, and by 1970 plans for another rescheduling were being made. The plan included another devaluation of the cedi and another nominal increase in debt. Upon implementation, public outrage was so strong that a coup took place and the new administration immediately rescinded the devaluation and the plan. Additionally, the new administration instituted a moratorium on all short and medium term debts, including arrears, repudiated a significant percentage of the Nkrumah debts and announced that only those supplier's credits linked to economically viable projects not "vitiated by fraud, corruption or other illegality" would be honored, and those, only on IDA terms (10 year grace periods and 50 year amortizations).

The hard line adopted by the new administration resulted in negotiations that were much more amenable to the alleviation of Ghana's debt problem. The demands were taken into consideration by creditors and Ghana received the most generous rescheduling package to date. The settlement allowed for repayment over 28 years with an interest rate of 2.5% and an initial grace period of two years.
Part Two

Hypothesis. What caused debt to grow?

Originally, this essay was to be based on the existence of a negative correlation between capital inflows and savings. It was assumed that the disclosure of an inverse relationship between foreign aid and savings would help to highlight the negative impact of foreign aid on savings, thus its adverse effect on the ability to repay loans, and consequently, the excessive growth of debt, which has stifled autonomous growth and increased the dependency of the borrowing economy. It was expected that a cyclical pattern would evolve whereby foreign aid would reduce savings and, consequently, increase the future need for more aid.

The regression equation used was $S = a + b(Y) + c(F)$ in which $S =$ savings; $Y =$ gnp; and $F =$ foreign aid in the form of loans and grants. The results were: $S = 7.98 + .117(Y) + .886(F)$. The most important outcome of the regression was the positive sign of the coefficient for $F$ immediately nullifying the original hypothesis that foreign aid negatively impacted savings, thus crippling repayment capabilities and encouraging the growth of debt. The two independent variables $Y$ and $F$ account for almost 90% (.891)

(1) The equation was taken from a paper written by Bernard Wassow "Dependency in a Capital Importing Economy", Oxford Economic Papers.

The data for the equation was taken from the Economic Survey of Ghana and the World Tables.
of the variance in \( S \). The results indicate that a single unit change in \( Y \) could be expected to bring about a .12 unit change in \( S \). The \( t \) value is equal to 9 indicating a .005 level of significance. Therefore, we can be 99% certain that the above relationship between \( Y \) and \( S \) is not insignificant. The results also indicate that a single unit change in \( F \) can be expected to bring about a .89 unit change in \( S \). The \( t \) value is equal to 1.27 indicating a .15 level of significance and 85% certainty of the non insignificance of the relationship between \( F \) and \( S \). Certainly, the original hypothesis is not supported by the outcomes of this regression; there appears to be a positive and not insignificant relationship between foreign aid and savings. It is important to note, however, that the national account and other economic data on Ghana is inadequate and inconsistent. Certainly, other data from other reliable sources are highly likely to yield different results. In fact, the first time I did the regression, the sign was as expected (negative), but the overall significance was low.

The succeeding hypothesis concerning the causes of debt escalation is related to the behavior of national savings, export earnings and productive output. Growth of these three elements are key to the ability to repay debts, however, they remained low relative to what was required for repayment obligations. This effectively meant that the use of foreign savings to supplement inadequate domestic resources (savings and export earnings) created a debt which when
coupled with the low levels of productive output became unserviceable.

Refer to Table 4. The column labelled NS/NI represents the ratio of national savings to national income. It is apparent from the Table that the ratio remained low throughout the period under study and experienced no absolute growth. The column labelled $\Delta \text{NS/NI}$ represents the annual growth rates of the ratio which were primarily negative up to 1967 and insignificantly positive after 1967. Theoretically, if the debts were to be repaid without seriously crippling the economy and development efforts, the growth of the ratio should have been significantly positive. The ability to repay debts was highly correlated to the growth of savings resulting from income growth (which resulted from investments). In spite of growth in investments and a fairly consistent growth in national income, national savings did not experience growth required for debt repayments. Consequently, debt and dependence on foreign aid grew.

Refer to Table 5. The column labeled $\Delta \text{E/E}$ represents the annual growth rates of export earnings. The column labeled $\Delta \text{M/M}$ represents the annual growth rates of imports. When Ghana began to actively seek out and receive foreign aid, it was primarily because its export earnings were not sufficient for payment of import bills. It was expected that, at some point, with the help of foreign aid financed investments and imported investment inputs, the export
earnings would expand, thus, rendering the economy self-sufficient enough to service debt payments with domestic resources, and reduce the need for future borrowing to finance the import bill. In order for these expectations to be fulfilled, the export earnings would have had to develop to a level at which its growth rate would be greater than the growth rate of the import bill. This did not occur. Debt did allow the expansion of the import bill beyond domestic financing capacity, however, the new export earnings generated by new development investments did not grow fast enough to help repay the debts. In the period under study, the growth rate of imports was faster than that of exports for seven years; the growth role of imports was slower than that of exports for four years; and, in three years, both imports and exports experienced negative growth. The average annual growth rate for imports and exports was 12% and 10% respectively.

The slow growth of savings and exports was indicative of the problem which required the use of external finances for development purposes. In each year of the study period, there was a trade and savings gap,* both substantially negative (i.e. imports were greater than exports and investments were greater than savings) with the exceptions of

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*The trade gap is defined as the "resource gap" published by the World Bank in the World Tables (1976 and 1980); the savings gap is derived from the national savings and domestic investment figures published in the same tables.
1972 and 1973 years in which the terms of trade for Ghana's exports became favorable. The financing of these gaps in itself should not have created problems for the economy, theoretically. The finances - representing the debt - should have been invested in ways in which income could have increased. For instance, export earnings and consequently savings, should have increased as a result of the expansive effect of external finances on investment. With the increased export earnings and savings, the repayment of the debts could have been made and the net outcome would be no debts and new sources of export earnings and savings such that imports and investments could be financed with domestic resources. Even if the process could not be completed in the time period under study, it could be expected that some indication of an evolution towards that point would be apparent. This has not been the case for Ghana. The financing of the two gaps has not resulted in a sufficiently expanded productive capacity.

If the expansion of productive output is to occur, it is required that the effectiveness of each new investment increase over time. If this occurs, it is easier for the economy to repay the debts and avoid as great a need for foreign supplementation of domestic resources.

Refer to Table 4. Using incremental output capital ratio (IOCR) as a proxy for changes in productive capacity, it is apparent that the capacity of the economy to produce from capital employed declined throughout the 1960's and it
wasn't until 1971 that the declining IOCR began to level off. My hypothesis, then, is that the chronic need to supplement domestic resources with foreign resources, i.e. financing of the gaps, combined with the poor performance of productive capacity are in large part responsible for the escalation of external debt. Investments and the import bill continued to grow each year primarily due to the boosts provided by external finances expected to increase productive capacity. When productive capacity, expected to generate increases in savings from investments and export earnings (foreign exchange) for the import bill and debt re-payment, did not expand, the debts began to accumulate and the economy became crippled, development efforts stifled.

I developed the following regression equation based on the above hypothesis: 

\[ D = a + b(T) + c(S) + d(IOCR) \]

where \( D \) = external public debt; \( T \) = trade gap, \( S \) = savings gap; \( IOCR \) = incremental output capital ratio.

Both \( T \) and \( S \) represent the external borrowing that was required to carry out import and investment plans. IOCR represents the marginal changes in the productive output of the economy. The significance of the equation is to determine the nature of the relationship between the two gaps, IOCR and external public debt.

The reason for the use of the trade and savings gaps in this equation is that they roughly represent the amount of foreign aid required and received by the economy to finance investment plans and the import bill. It is
expected that the financing of the gaps - a proxy for foreign aid received - combined with the low productive capacity, substantially encouraged the growth of debt. The results of the regression are: \( D = 1053.359 + .638(T) - 1.112(S) - 881.289 \) (IOCR).

Together, the independent variables account for 90\% (.907) of the variance in debt and there are eight degrees of freedom.

Results indicate that a single unit change in the trade gap or a single unit increase in the gap can be expected to result in a .64 unit increase in debt. The \( T \) value is equal to 4.817 indicating a .005 level of significance or 99\% certainty that the relationship between the trade gap and the debt is not insignificant. Financing of the trade gap doesn't appear to have had a very large impact on debt, though the impact indicated does appear to be significant.

A single unit change or increase in the savings gap can be expected to bring about a 1.11 unit change or decrease in the external debt. This is a curious outcome because the implications are that the larger the savings gap becomes, the smaller will be public debt. I expected a positive rather than negative relationship between the savings gap and debt, and cannot explain this outcome. I did regress other savings gap figures on debt, however, and the sign was negative then, as well. The \( T \) value is equal to .419, consequently the confidence
attached to the above relationship (between the savings gap and the debt) is very low. The impact of the financing of the savings gap on debt is not significantly different from zero.

IOCR appears to have the most significant impact on public debt since a single unit change in IOCR could be expected to inversely impact debt substantially. The T value is equal to 4.8 indicating a .005 level of significance or 99% confidence that the impact of IOCR on debt is significantly different from zero. The seemingly large impact of IOCR on debt is no doubt offset by the typical size of annual changes in IOCR, generally between .132 and .001 units. It takes a long time to bring about a single unit change in IOCR, and consequently an .881 unit change in debt. Even over the period studied, IOCR did not increase or decrease by a total unit (it actually experienced a consistent decline of .681 or 68% of a single unit).

In summary, it appears that the three variables are key elements involved in the growth of debt and only the trade gap and IOCR are significantly different from zero. The strange behavior or impact of debt relative to the savings gap is not significantly different from zero.
Part III

Issues

These are issues I consider to be important and relevant to the causes behind the growth of debt. They include: (1) credit financed development; (2) the optimal type of development and industrialization as a strategy for growth and development; (3) international specialization and manipulation of the terms of trade; (4) external orientation of the economy; and (5) the contribution made by debt management policies.

Credit financed development

In its attempt to develop, Ghana was caught in a bind. Acceptance of official aid on concessional terms would have meant the acquiescence of development policy makers to the requests of the providers of aid. Policy makers may have been forced to give up projects they believed were important to development progress for the sake of projects that were of higher priority to the lenders. The alternative was the acceptance of the supplier's and contractor's credits on commercial terms, in order to finance development. When payments began to fall due, more often than not, the projects had not yet generated the output and revenue needed to repay, and consequently, debt accumulated. Because Ghana could not, due to its political and economic orientations, attract concessional long term aid, it had to resort to acceptance of commercial short term aid to finance what were considered to be high priority development projects,
which tended to be characterized, for a variety of reasons, by low levels of economic return.

"...nations have failed to develop not because they had too little international money, but because they had too much. All nations will find that some imports are genuinely essential, and many more are useful if properly utilized, when they develop new industries and a new productive capacity. But imports are somewhat analogous to medicines administered to an ailing body. The same medicine which, in small doses, aids and stimulates the body's own powers of recovery may, in massive amounts, enervate and addict the patient beyond hope of recovery.

The analogy to an addictive drug can be carried to some length. Just as a 'pusher' finds it good business to provide free samples on which potential users can get 'hooked', so the grant aid of the 1950's served to make poor nations dependent on Western brand names and accustomed to the idea of development via imports, rather than by their own efforts, thus paving the way to the debt slavery of the 1960's and 1970's. And, just as the absence of heroin means nothing to the non-addict but is shattering for the addict, so the nation which has once accepted the pusher's wares will find the denial of aid much more difficult and dangerous than the one which has never succumbed to, or been offered the chance of, temptation. The nation which is trying to break out of the system is bound to suffer withdrawal pains, the severity of which will be proportional to the previous degree of aid dependence."

This quote by Cheryl Payer, The Debt Trap, illuminates the problem associated with the use of commercial credit to finance development. The credits received by Ghana were all attached to the purchase of imports considered to be required for development and growth. Between 1959 and 1965, Ghana received credits and contracts very easily from creditors anxious to make sells. The flood of this type of aid - commercial terms - into an economy in which
the development emphasis was on infrastructure and other social and public service provision - not direct investment into ventures that would quickly aid expansion of productive capacity - helped to create an unmanageable external debt position. The problem was not that Ghana received too little or too much aid, but that it received too little of the appropriate type of aid - long term concessional aid - in view of the priorities of its development portfolio. Perhaps if Ghana had been able to attract concessional aid as it began implementation of its development plans, the debt problem may have been short circuited. Additionally, had it not been thought that development required imported inputs - intermediate goods, etc. - the debt problem may have been short circuited.

Optimal type of development and industrialization as a strategy for growth and development.

Ghana's debt accumulated as it attempted to implement its development plans. This calls to question the type of development aimed for.

"One type (of development) is built on servicing the needs of the rich countries, or more precisely, of the corporations in the rich countries. Development of this type will bring in the latest technological gadgets, but only for the purposes which suit the corporations, such as extracting mineral ores. The other type of development starts by ensuring that everybody has enough food to eat and works up from there to provide more amenities as it becomes possible to produce them. No very high levels of technology are needed in the first stages of this type of development."
In its attempt to modernize the traditional sectors, Ghana opted for the first type of development. Based on the recommendations made by expatriate development specialists, and accepted by Ghanian officials, the premise of the plans for development included agricultural and industrial development strategies which were highly import oriented, and consequently, inappropriate to the Ghanian context, as evidenced by their failure.

"The orthodox strategy for developing a country calls for massive infusion, by purchase and import from abroad, of industrial and agricultural technologies and equipment, of processed and semiprocessed materials for assembly; of plans, planners, advisors, technicians and other experts. Thus, practically everything said to be required for development, it is recommended, must be imported--formulas, nuts, bolts and brains. All these must be bought on the international market of the Western economic system. By the rules of that market, however, they must be paid for in foreign exchange, something which most under-developed countries are short of. Barter between countries is discouraged. The payment rules of this international market, this orthodox strategy of buying development and carting it home, and the low earnings of Third World commodities, relative to the prices of what they must import, together guarantee that any such country, should it embark upon an infusionist development plan, shall spend its way into a chronic foreign exchange crisis."*

Ghana's case exemplifies this analysis made by Chinweizu. The growth strategy selected was based on the use of inputs which could not be produced domestically (hence their inappropriateness) and created a dependency on imports - for the sake of development.

International specialization and manipulation of the terms of trade

The concept of international specialization is based on the premise that an economy should mass produce those products it can produce more cheaply than most other economies (exports) and buy those products which it cannot produce as cheaply (imports). The financial resources used to pay for the imports (foreign exchange) are to be generated by selling exports. That is, each economy should exploit, for the benefit of the world, its comparative advantage.

Since all products are theoretically sold at their production costs, with some margin for profit, the exchanges should be fair and equal. Samir Amin in Unequal Development makes some interesting observations regarding the system of international exchange and trade terms. He states that the theoretical logistics of the system breaks down when a group of sellers of the same or similar product creates monopolies, and are able to hike the price of their goods, substantially above production costs relative to the prices of goods that they themselves must import. He also makes reference to the fact that despite the fast and constantly growing levels of efficiency, and the consequent decline in production costs, it should be expected that the prices of the exports specifically from the West would have declined between the 1940's to 1970's. However, the prices of these low cost exports from the West charged
to the developing world did not experience a reduction primarily because of the existence of monopolies.

In the 1960's, the declining trade terms of Ghana's exports did adversely influence its ability to repay the credits and loans received. Combined with the trade and savings gaps and regressed on debt, the terms of trade does appear to have had a non zero impact on debt. The result of the regression is:

\[ D = 41.475 + 14.542 (T) - 13.606 (S) - 1.875 (TT) \]

where TT is equal to the terms of trade; the \( r^2 \) is .750. There were nine degrees of freedom. The results indicate that there was indeed an inverse relationship between the trade terms and debt. A single unit increase in could be expected to result in a -1.876 unit decrease in debt - a substantial contribution. The T value is equal to 2 a rendering the significance level .05 and 95% confidence that the impact of the trade terms on debts was, in fact negative and not insignificant.

Within the framework of international specialization the developing economies have concentrated most of their productive efforts in raw materials and foodstuffs for export while the more developed economies have concentrated their efforts on development of capital and technology for export. The producers of capital and other technology have been more successful in developing sellers' monopolies, thus increasing the relative price of the goods so heavily depended on in most developing economies. The
relatively low earnings of their (LDC) export sector are not able to cover the costs of the required imports. Barring the oil-producing countries, the producers of food-stuffs and raw materials have been unable to create monopolies and cartels in order to command higher prices. Certainly, the resource-rich African nations have the resource potential to create sellers monopolies, but the strong political and cultural subdivisions render that possibility highly unlikely in the near future. Excessive external debt has largely accumulated due to the relatively unequal international system of exchange which is based on the concept of international specialization of a structural arrangement "...which prevents proper domestic investment of surplus, and instead promotes its flight abroad." The relative unprofitability of the export sector coupled with the dependence on imports magnified and complicated the debt problem.

External orientation of the economy

Acceptance of the concept of international specialization required that a vast amount of resources be channelled to that sector of the economy which was considered to be most promising in its ability to attract

outside buyers. In that way, the economy hoped to generate the foreign exchange needed to buy imports for development and other purposes. A result of this kind of concentration was the neglect of other sectors of the economy and society.

Since foreign aid is used largely to finance development plans and their imported inputs, it seems logical to expect that the outcome of any negotiations around the provision of aid will tend to result in the investment of aid to those sectors deemed most important or profitable from the point of view of the lender, at the expense of other sectors, more important to the needs of the internal market. This explains why, in the first two development decades, so much foreign aid was channelled to import oriented sectors and export sectors that provided inputs for capital production abroad, i.e., light industry, and mineral extraction and food production. Ghana formerly placed a significant amount of its resources into modernizing or industrializing the cocoa and timber sectors and presently is channelling a significant amount of its resources toward the extraction of gold and other minerals for export to the developed world. At the same time, many of the basic needs of the bulk of the population have not been met. Because development was so highly dependent on imports and could only be purchased with foreign exchange, the export sector received most of the attention and resources needed for development at the
expense and neglect of others.

Economic and debt management policies

Once developing economies have accepted foreign aid and incurred debt, how are they kept in the indebted position? Chinweizu answers this way:

"By the normal workings of Western management of their economies, a management imposed on acquiescent countries by IMF prescriptions and supervision backed by threats of sundry economic punishments if IMF's 'recommendations' are disregarded. A management imposed on rebellious countries by the threat of political destabilization, and, if necessary, by actual coups of invasions to unseat chronically 'refractory' regimes and replace them with others which will comply with IMF dictation."

Despite popular disapproval, the IMF played a significant role in the attempts to develop and implement policies to alleviate the debt problem.

Conversations with Ghanians indicate that Nkrumah had an unwritten policy which indicated no intention of repaying the debts, and upon realization of this, certain entities of the West helped to oust him by supporting his opposition. He was replaced by a military administration which openly accepted the debt obligations and against popular opinion called the IMF to Ghana to help stabilize the economy. Through a comprehensive economic management program, it is not clear that the

* Chinweizu, "The Third World's Trap into Peonage", Africa, No. 83 7/78
policies implemented actually aided the problem.

The "stabilization program", which included policies for debt management, was implemented. The program included: (1) a squeeze on public spending; (2) a 'shake-out' of labor from the public sector; (3) tariff, duty and import license changes and (4) devaluation. The stabilization period was followed by reschedulings in 1966, 1968 and 1974.

The squeeze on public spending and the labor 'shake-out' were very unpopular elements. They resulted in less (already short) public utilities and service and social services such as education and welfare. The tariff duty and import license changes were made in an effort to liberalize imports, a curious policy for an economy chronically short on foreign exchange. Probably the most devastating effect of the stabilization program with regard to the debt was the devaluation which resulted in a 31% increase in the nominal external debt obligations, thus adding insult to injury. The combination of the liberalized imports and devaluations does not appear to have had a significantly positive effect on the external position. Theoretically, the combined effect of a liberal import scheme and a currency devaluation should be offsetting. However, (refer to Table 3) if the devaluation results in an increase in debt and weaker purchasing power of the cedi relative to the foreign exchange that must be purchased to repay
the debts, then it is fair to guess that the external situation would deteriorate rather than improve.

In 1974, the debt continued to grow. In fact, over the 9 year time span - within the period under study - during which the IMF influenced internal economic policies, the debt problem did not improve.
Conclusion

The purpose of my thesis was to determine some of the major causes of excessive debt growth in Ghana. My original hypothesis was based on the assumption that international agencies and governments lending resources created the circumstances and mechanisms, which I'd hoped to discover, that were responsible for the accumulation; and that recipient governments were largely inactive and innocent victims of circumstances beyond their control.

However, I have come to learn that the accumulation of debt was due to circumstances and mechanisms created not only by the lenders, but by the borrower as well. On the creditor side, corruption and dishonesty, manifest through overcharging, supplying obsolete and defective equipment, reneging on work agreed upon in the contract and paid for, etc. all helped to decrease the likelihood of repayment by sabotaging productivity. On the recipient side, the internal structure of the country suffered from administrative and planning incompetence, and a general lack of prudence around the structuring of meaningful and viable economic development policies. The most blatant example of this was the massive use of medium term supplier's credits to finance infrastructure projects and "turn key" projects which had questionable economic returns.
In the final analysis, both the donors and the recipients appear to have been responsible for the growth of debt. I do, however, still have an intuitive feeling that indicates that further research would show that the actions of the donors were devious and subtle with the result that their contributions to the debt problem were much more damaging than those of the borrower. These feelings are based on the evidence that showed that creditors tended to be involved in the development process more for the sake of self interest than for the sake of development, resulting in an implicit policy of lending to finance one's own exports rather than to promote growth and development.

The policy options available to Nkrumah when he negotiated the receipt of the credits ranged, in theory, from total rejection of all credit on terms provided, to total acceptance, the tendency being toward the latter. Had I, given the advantage of hindsight, the opportunity to advise Nkrumah, I would have suggested that whatever option selected, it should be clear that the credit terms be appropriate given the nature of the projects they were to finance. More explicitly, the projects must be expected to generate the amount needed for repayment by the time repayment is due.
The major cause of Ghana's debt problem was that the credit repayment terms were not appropriate given the economic returns of the credit financed projects. The responsibility to insure this match lies with both the donor and recipient, requiring a better balance of power in the negotiation process. A better power balance would be helpful in insuring not only a realistic relationship between credit terms and project return, but that the projects implemented are truly meaningful to the development of the recipient, and not just a means of expanding the export market of the donor.

My further research will include a broader study of the causes of excessive debt accumulation in order to determine how generalizable the conclusions reached in this case study are and to determine other causes of accumulation. Logically, when a significant portion of one's funds are tied to payments to the outside world, limitations are placed on the ability to develop internally. Additional research will include the effects excessive debt has on the potential and actual development of the debtor economy. Eventually, I hope to develop some strong policy conclusions related to the alleviation of current levels of debt, and the avoidance of future additions to the excessive accumulations.
Bibliography

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Source: *Economic Survey of Ghana*, for years given. Supplier's credit is considered medium term and is classified, in this listing, as long term debt.
### Table 2

**Central Government Debt**

((percentages)

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<th>Short term</th>
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*Source: Economic Survey of Ghana, for years given.*
Table 3

**Known Government Foreign Liabilities as at the End of Year**

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<td>1,910</td>
<td>2,867</td>
</tr>
<tr>
<td>I.M.F. Drawings</td>
<td>—</td>
<td>—</td>
<td>10,178</td>
<td>10,178</td>
<td>10,178</td>
<td>10,178</td>
<td>33,912</td>
<td>29,724</td>
<td>44,604</td>
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<tr>
<td>Volta River Project Loans</td>
<td>—</td>
<td>—</td>
<td>260</td>
<td>16,208</td>
<td>32,042</td>
<td>46,345</td>
<td>55,266</td>
<td>46,342</td>
<td>69,543</td>
</tr>
<tr>
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<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>286,276</td>
<td>301,010</td>
<td>283,583</td>
<td>273,460</td>
<td>341,173</td>
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<tr>
<td>Counterpart Funds</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>4,956</td>
<td>6,902</td>
<td>8,120</td>
<td>7,106</td>
<td>10,662</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>12,640</strong></td>
<td><strong>16,326</strong></td>
<td><strong>25,454</strong></td>
<td><strong>38,372</strong></td>
<td><strong>346,786</strong></td>
<td><strong>378,363</strong></td>
<td><strong>395,337</strong></td>
<td><strong>368,628</strong></td>
<td><strong>483,985</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Joint Consolidated Fund</td>
<td>15,136</td>
<td>15,746</td>
<td>6,517</td>
<td>—</td>
<td>5</td>
<td>7</td>
<td>7</td>
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<td>Government Stocks</td>
<td>2,867</td>
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</tr>
<tr>
<td>I.M.F. Drawings</td>
<td>44,604</td>
<td>67,109</td>
<td>67,095</td>
<td>64,395</td>
<td>46,818</td>
<td>38,746</td>
<td>27,746</td>
<td>11,465</td>
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<tr>
<td>Volta River Project Loans</td>
<td>69,543</td>
<td>78,797</td>
<td>75,962</td>
<td>74,155</td>
<td>75,265</td>
<td>99,051</td>
<td>88,745</td>
<td>85,364</td>
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<tr>
<td>Suppliers' Credit</td>
<td>333,913</td>
<td>311,548</td>
<td>302,195</td>
<td>293,287</td>
<td>283,442</td>
<td>297,241</td>
<td>295,753</td>
<td>291,994</td>
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<tr>
<td>Counterpart Funds</td>
<td>10,662</td>
<td>15,809</td>
<td>51,759</td>
<td>106,545</td>
<td>133,936</td>
<td>201,396</td>
<td>236,917</td>
<td>236,721</td>
</tr>
<tr>
<td>K.F.W. West German Loan</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>5,253</td>
<td>9,517</td>
<td>12,975</td>
<td>12,351</td>
<td>12,595</td>
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<tr>
<td>International Development Association</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>—</td>
<td>10,169</td>
<td>14,075</td>
<td>14,264</td>
<td>14,332</td>
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<tr>
<td><strong>Total</strong></td>
<td><strong>480,725</strong></td>
<td><strong>491,876</strong></td>
<td><strong>506,395</strong></td>
<td><strong>543,635</strong></td>
<td><strong>556,152</strong></td>
<td><strong>663,491</strong></td>
<td><strong>675,783</strong></td>
<td><strong>652,559</strong></td>
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</table>

Source: Economic Survey of Ghana
Table 4

National Savings Relative to National Income

<table>
<thead>
<tr>
<th>Year</th>
<th>NS/NI</th>
<th>ΔNS/NI/NS/NI</th>
<th>IOCR</th>
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<tbody>
<tr>
<td>1960</td>
<td>.18</td>
<td>- .05 (1960-1961)</td>
<td>1.31</td>
</tr>
<tr>
<td>1961</td>
<td>.09</td>
<td>- .07</td>
<td>1.267</td>
</tr>
<tr>
<td>1962</td>
<td>.13</td>
<td>.44</td>
<td>1.135</td>
</tr>
<tr>
<td>1963</td>
<td>.12</td>
<td>- .07</td>
<td>1.01</td>
</tr>
<tr>
<td>1964</td>
<td>.16</td>
<td>.33</td>
<td>.951</td>
</tr>
<tr>
<td>1965</td>
<td>.08</td>
<td>- .5</td>
<td>.873</td>
</tr>
<tr>
<td>1966</td>
<td>.07</td>
<td>- .125</td>
<td>.804</td>
</tr>
<tr>
<td>1967</td>
<td>.06</td>
<td>- .14</td>
<td>.740</td>
</tr>
<tr>
<td>1968</td>
<td>.09</td>
<td>.5</td>
<td>.689</td>
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<tr>
<td>1969</td>
<td>.1</td>
<td>.11</td>
<td>.684</td>
</tr>
<tr>
<td>1970</td>
<td>.13</td>
<td>.3</td>
<td>.683</td>
</tr>
<tr>
<td>1971</td>
<td>.09</td>
<td>.301</td>
<td>.685</td>
</tr>
<tr>
<td>1972</td>
<td>.13</td>
<td>.44</td>
<td></td>
</tr>
<tr>
<td>1973</td>
<td>.13</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>1974</td>
<td>.09</td>
<td>.44</td>
<td></td>
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</table>

Derived from figures published in the following:
Table 5

**Annual Changes in Imports and Exports**

<table>
<thead>
<tr>
<th>Year</th>
<th>$\Delta$ Exports/Exports</th>
<th>$\Delta$ Imports/Imports</th>
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</thead>
<tbody>
<tr>
<td>1960</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1961</td>
<td>0.02</td>
<td>0.1</td>
</tr>
<tr>
<td>1962</td>
<td>-0.01</td>
<td>-0.17</td>
</tr>
<tr>
<td>1963</td>
<td>-0.02</td>
<td>0.07</td>
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<tr>
<td>1964</td>
<td>0.05</td>
<td>-0.02</td>
</tr>
<tr>
<td>1965</td>
<td>0.02</td>
<td>0.32</td>
</tr>
<tr>
<td>1966</td>
<td>-0.11</td>
<td>-0.24</td>
</tr>
<tr>
<td>1967</td>
<td>0.18</td>
<td>0.006</td>
</tr>
<tr>
<td>1968</td>
<td>0.31</td>
<td>0.18</td>
</tr>
<tr>
<td>1969</td>
<td>0.14</td>
<td>0.15</td>
</tr>
<tr>
<td>1970</td>
<td>0.22</td>
<td>0.26</td>
</tr>
<tr>
<td>1971</td>
<td>-0.18</td>
<td>-0.01</td>
</tr>
<tr>
<td>1972</td>
<td>0.49</td>
<td>-0.15</td>
</tr>
<tr>
<td>1973</td>
<td>0.28</td>
<td>0.40</td>
</tr>
<tr>
<td>1974</td>
<td>0.13</td>
<td>0.75</td>
</tr>
</tbody>
</table>

Annual average growth rate

10% 12%

Derived from figures published in the
Table 6

<table>
<thead>
<tr>
<th>Year</th>
<th>Trade Gap</th>
<th>Savings Gap</th>
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</thead>
<tbody>
<tr>
<td>1960</td>
<td>-63</td>
<td>-73</td>
</tr>
<tr>
<td>1961</td>
<td>-97</td>
<td>-110</td>
</tr>
<tr>
<td>1962</td>
<td>-42</td>
<td>-52</td>
</tr>
<tr>
<td>1963</td>
<td>-69</td>
<td>-87</td>
</tr>
<tr>
<td>1964</td>
<td>-49</td>
<td>-61</td>
</tr>
<tr>
<td>1965</td>
<td>-141</td>
<td>-160</td>
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<td>1966</td>
<td>-76</td>
<td>-90</td>
</tr>
<tr>
<td>1967</td>
<td>-38</td>
<td>-70</td>
</tr>
<tr>
<td>1968</td>
<td>-8</td>
<td>-60</td>
</tr>
<tr>
<td>1969</td>
<td>-13</td>
<td>-61</td>
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<tr>
<td>1970</td>
<td>-31</td>
<td>-76</td>
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<tr>
<td>1971</td>
<td>-112</td>
<td>-158</td>
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<tr>
<td>1972</td>
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<td>1973</td>
<td>151</td>
<td>125</td>
</tr>
<tr>
<td>1974</td>
<td>-199</td>
<td>-230</td>
</tr>
</tbody>
</table>

* Current prices.

Source: Economic Survey of Ghana, for years shown.
Table 7

Regression Results

<table>
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<tr>
<th></th>
<th>coef</th>
<th>stand err</th>
<th>dsfd</th>
<th>F ratio</th>
<th>sis</th>
</tr>
</thead>
<tbody>
<tr>
<td>constant</td>
<td>-7.980</td>
<td>27.937</td>
<td>12.000</td>
<td>0.082</td>
<td>0.780</td>
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<tr>
<td>Y</td>
<td>0.117</td>
<td>0.013</td>
<td>12.000</td>
<td>86.710</td>
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<tr>
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<td>0.693</td>
<td>12.000</td>
<td>1.632</td>
<td>0.226</td>
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\[ r^2 = 0.891 \]

<table>
<thead>
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<th>stand err</th>
<th>dsfd</th>
<th>F ratio</th>
<th>sis</th>
</tr>
</thead>
<tbody>
<tr>
<td>constant</td>
<td>-28.727</td>
<td>20.841</td>
<td>11.000</td>
<td>1.900</td>
<td>0.195</td>
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<tr>
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<td>0.347</td>
<td>11.000</td>
<td>2.783</td>
<td>0.123</td>
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</table>

\[ r^2 = 0.202 \]

<table>
<thead>
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<th>stand err</th>
<th>dsfd</th>
<th>F ratio</th>
<th>sis</th>
</tr>
</thead>
<tbody>
<tr>
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<td>9.000</td>
<td>1.577</td>
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</tr>
<tr>
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<td>0.669</td>
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<tr>
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<td>0.188</td>
<td>9.000</td>
<td>4.753</td>
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\[ r^2 = 0.359 \]

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<th>dsfd</th>
<th>F ratio</th>
<th>sis</th>
</tr>
</thead>
<tbody>
<tr>
<td>constant</td>
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<tr>
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<td>0.638</td>
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<td>8.000</td>
<td>0.064</td>
<td>0.806</td>
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<tr>
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<td>8.000</td>
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<tr>
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\[ r^2 = 0.907 \]
Table 7 con't.

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</thead>
<tbody>
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<td>10.607</td>
<td>0.007</td>
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\[ r^2 = 0.525 \]

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</thead>
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<td>9.000</td>
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<td>0.001</td>
</tr>
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<td>3.999</td>
<td>0.077</td>
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\[ r^2 = 0.750 \]