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**The Effect of Ghana's External Debt on Economic Growth**

**By**

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## DEDICATION

I dedicate this project to GOD ALMIGHTY, for giving me wisdom to apply the best kind of knowledge. Also, I dedicate this paper to my grandmothers, Benedicta Appiah Asante and Helena Akua Boatemaa Appiah and mother, Nana Gyamfua Asante for their special care, support and prayer.

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## ABSTRACT

Ghana's external debt has been on the increase due to the dependence of the Government on international capital markets to secure loans to finance most of her expenditure. High external debts can erode confidence in economic reforms and thus diminish the sustainability of what might be an otherwise sound economic strategy. This study therefore investigated the effect of external debt on economic growth in Ghana. The study made use of data spanning the period 1970-2013 which was sourced from World Bank Development Indicators and International Debt statistics. The method of estimation was based on the Autoregressive distributed Lag (ARDL) model. The study established the existence of a long run relationship between economic growth and external Debt in Ghana. In the long run, the external debt-GNI ratio – a measure for debt overhang is correctly signed (i.e. negative) and significant at the 1% level. The debt service-export ratio - a measure for debt overcrowding was also found to have a negative and statistically significant effect on economic growth at the 1% level. The effect of the debt service-export ratio was however severe than the debt service-export ratio in the long run. Gross domestic investment and population growth rate were also found to significantly affect economic growth in the long run. In the short run, the debt service-export ratio was again found to have a negative and statistically significant effect on economic growth at the 1% level. Gross domestic investment and exchange rate were also found to have a significant influence on economic growth in the short run. It is recommended that fiscal consolidation and discipline measures should be implemented to ensure that external debt are kept at levels at par with our debt servicing mechanisms. Also, our debt servicing mechanism needs to be revised where projects that are financed with external loans should be capable of generating returns which should be used to finance these loans.

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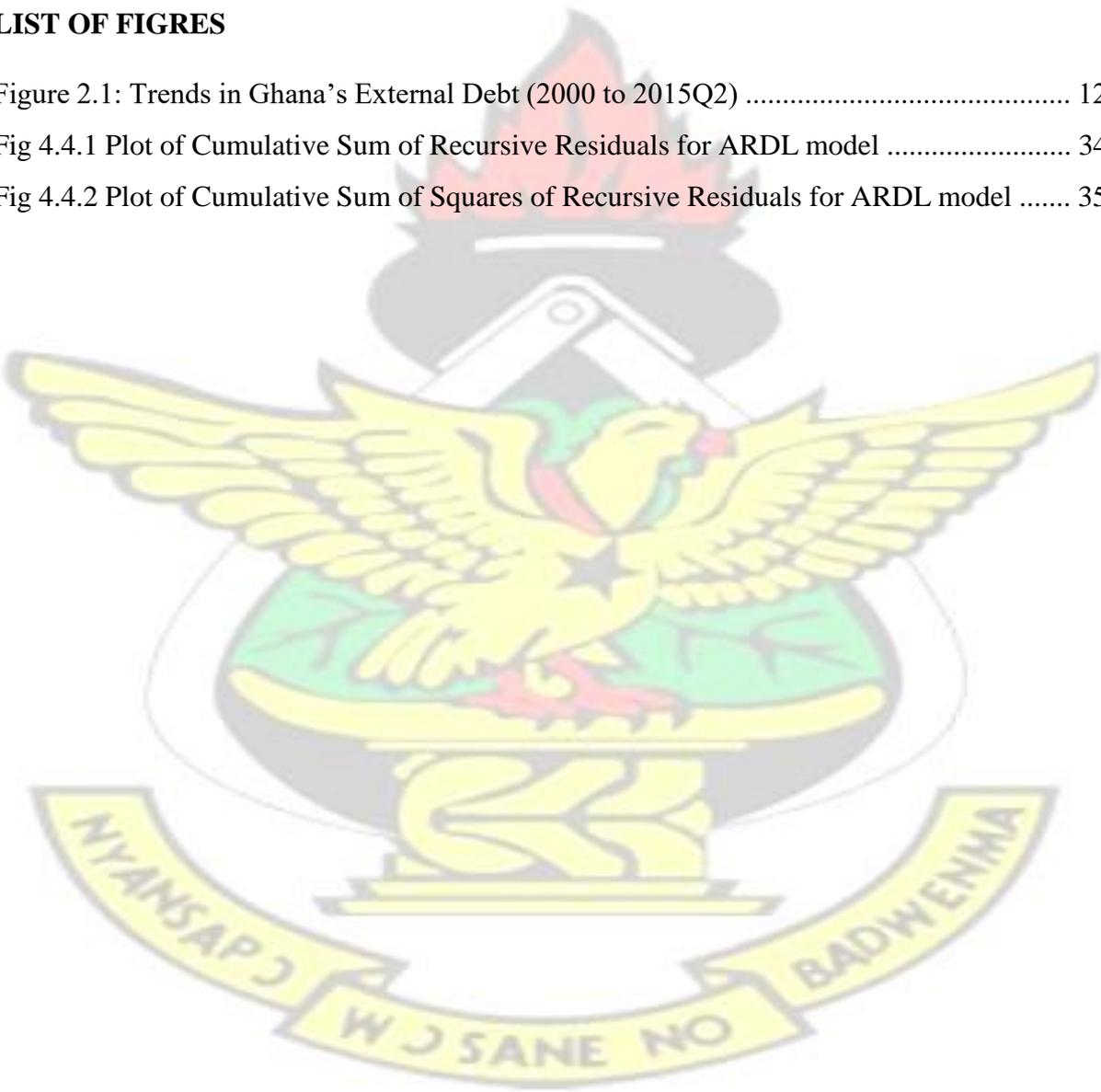
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# CHAPTER ONE

## INTRODUCTION

### 1.0 Background of the Study

Due to insufficient domestic resources and less tendency of saving, many countries globally have difficulties to finance economic development, most importantly in developing and less developed countries. This implies that external finances and resources are required to make up the inadequate domestic sources of finance. Research conducted by Bilginoglu and Aysu (2008) points to the fact that the more we invest the more there is an increase in external debt. Debt problem is one of the economic problems in most developing countries globally. This therefore indicates that the remainder of revenues after consumption is labeled as savings and these residuals are canalized to the investment.

One of the macroeconomic problems faced by developing countries has been the issue of debt crisis since the 1980s. Several researches, as a result, have been conducted to find out the cause, consequences with the view of finding an amicable possible solution to this crisis. With regards to the research conducted by Krumm (1985), the economic and political conditions of many poor countries in 1970s could have been the probable cause of debt crisis. It was in the course of this period (1970s) that many developing countries had extended access to funding from private financial sector as well numerous and varied trade credits. Developing countries had enough and therefore spent more on public expenditure. In addition, most countries including developing countries were taken off-guard by the second oil price shock which seriously affected their fiscal position.

Countries in Sub-Saharan Africa were not left out from this state of affairs. The negative consequences of the debt crisis have, if anything, been more noticeable in Sub-Saharan Africa.

Real imports by Sub-Saharan Africa countries in 1987 were only two-thirds of levels recorded in 1980. This was a reflection of the effect of increased burden of debt servicing. Export earnings were also affected since most of the foreign exchange earned had to be set aside for debt repayment and servicing. Gross capital formation saw a sharp decline from 20% in 1980 to 13% in 1987. Also during the same period, real GDP also declined by 11%,

The data to an extent was a reflection figures reflection of the effects of the 1986-1987 oil price fall on Nigeria, which the largest exporter of crude oil in Africa. When Nigeria is excluded the results remain similar. For example, in 1987 real imports were 17% lower compared to levels recorded in 1980. Nominal export volumes were also 10% below levels recorded in 1980. This notwithstanding, due to the decline in gross capital formation and gross domestic savings, real GDP per capita reduced by 6% within 7 years (1980-1987) (Greene and Khan 1990).

Ghana as one among the developing countries has external debt that is very crucial in terms of future debt repayment. In the year 2000, out of the 6,062 million US dollars external debt, 87.8% represented the long term component of the external debt stock, 4.7% also represented short term debt, and 7.5% on the other hand represented medium term debt. Between 2000 and the second quarter of 2015 increased from US\$6,0621 million in 2000 to US\$13552.65 million as at the end of the second quarter in 2015. The external debt accumulated in 2000 total witnessed a 25% rise as at the end of 2004. It increased from US\$6,021 million in 2000 to US\$7,549 million as at the 2004. However, external debt witnessed a decline afterwards mainly due to Heavily Indebted Poor Countries (HIPC) initiative Ghana resorted to. In 2006, external debt was US\$2,177 million representing almost 71.2%.

The high ratio of the total external debt of Ghana in relation to Gross Domestic Product (GDP) stood the risk of having accumulated debt, which may not be sustainable in the long run. According to MOFEP (2015), the total public debt of the country at the end of 2014 was

GH¢79.6 billion (US\$24.8 billion). Out of this amount, the external debt of the country was GH¢44.5 billion (US\$13.9 billion) representing 55.96% whereas the domestic debt amounted to GH¢35.0 billion (US\$10.9 billion) representing 44.4%.

This trend in result if not checked may render the country serious implications for the Ghanaian economy.

### **1.1 Problem statement**

The public debt profile of Ghana has been on the ascendency. According to MOFEP (2015), the total debt stock as at the end of May, 2015 stood at GH¢90.0 billion representing 67.53% of GDP. This amount comprises GH¢36.2 billion domestic debt and GH¢53.8 billion external debt. Although Ghana has engaged in the HIPC relief program, the country's external debt accumulation continues to be on the ascendency with many raising concerns over its consequent effect on economic growth.

There is still controversy surrounding the effect of accumulating external debt on economic growth. External debt can influence economic growth either positively or negatively. Poisson *et al.* (2004) posit that external debt influences economic growth positively because it leads to an increase in the inflow of capital and can accelerate the growth of an economy when used particularly for expenditures related to growth. Conversely, there is another school of thought that is of the view that external debt can lead to a contraction of the economy accrued further than a certain threshold. This is commonly known as the debt overhang hypothesis, which states a very high level of indebtedness dampen investment and will affect growth of an economy negatively because higher taxes in the future are expected to be used to repay the debt (Poirson *et al.*,2004).

Also, debt service according to Gohar et al (2012) can be a developmental challenge for many countries particularly developing countries due to the fact that the debt service requirement usually outweighs the amount that was borrowed. This therefore serves as a drain on government coffers by limiting the amount of resources and financial facilities available for developmental projects. This adversely affects the growth of the economy.

Many are of the view that high debt profile of Ghana if not checked will jeopardize economic growth while others also believe that the debt profile in itself is not a problem but rather the debt servicing mechanism is not sustainable since the country has to go to the extent of borrowing to service her debts. This study therefore in general investigates the effect of external debt on the economic growth in Ghana as the study case.

## **1.2 Objectives of the study**

The main objective of the study is to investigate the effect of external debt on economic growth in Ghana. Specifically, the study seeks;

1. To investigate the existence of long run relationship between external debt and economic growth in Ghana
2. To estimate the short and long run effect of debt overcrowding on economic growth in Ghana.
3. To estimate the short and long run effect of debt overhang on economic growth in Ghana.

## **1.3 Hypotheses of the study**

- i. There is no long run relationship between external debt and economic growth
- ii. Debt overcrowding affects economic growth negatively in Ghana.
- iii. Debt overhang affects economic growth negatively in Ghana.

#### **1.4 Significance of the study**

External debt is one of the major problem affecting developing countries. Despite the importance of this subject, very minimal studies have been conducted to investigate empirically the effect of external debt on economic growth. Moreover, most of the researches conducted on the subject rely basically on cross-country regressions and thus has the weakness of not reflecting or explaining enough the actual happenings in a particular country. The results of the study are of relevance for policy options because it will give an empirical nature of the effect of external debt on economic growth in Ghana.

It will also serve as future reference to students and other researchers interested in the subject matter.

#### **1.5 Scope of the study**

The study is confined to the analysis of long and short run effect of external debt on economic growth in Ghana from 1970 to 2013. The choice of the time and variables is greatly informed by the availability of data

#### **1.6 Limitation of the study**

This study looks at the effect of external debt on the aggregate economy given the relative short period available to undertake this research.

#### **1.7 Organization of the Study**

The study is organized into five main chapters. The rest of the chapter is structured as follows. Chapter two reviews the relevant literature on the effects of external debt on growth. Chapter three then discusses the method employed to analyze the data. Chapter four gives information on the analysis of data and discussions of the findings and finally, Chapter five features the summary of findings, conclusion and recommendation.

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## CHAPTER TWO

### LITERATURE REVIEW

#### 2.0 Introduction

This chapter reviews both theoretical and empirical literature on the effect of external debt on economic growth. The chapter specifically starts by presenting some concepts on external debt, proceeds to give a theoretical analysis of the effect of external debt on economic growth and ends with an empirical evidence of the effect of external debt on economic growth.

#### 2.1 Concept of External Debt

Total external debt as defined by the World Bank is “the debt owed to non-residents which is repayable in foreign currency, goods or services”. As a consequence of normal activity most countries tend to have some kind of national debt. Sometimes, countries accumulate unmanageable levels of debt due to particular economic crises. According to Pattillo *et al.*, (2002), when developing countries borrow at judicious echelons, economic theory suggests that economic growth is likely to improve. In general, two main factors according to Soludo (2003), motivates the decision to borrow; Either to increase investment opportunities, increase spending on education and health or to fund transient deficit in balance of payments in order to reduce the rates on nominal interest overseas, inadequate levels of domestic longterm funding sources, or to circumvent hard budget restraints. This means that countries borrow to increase the growth potential of their economies and poverty reduction.

A country’s poverty situation can probably improve if the economy grows at least at 5%. In an attempt to buoy up growth, developing countries such as Ghana with huge infrastructural deficit borrow to supplement their small levels of domestic capital stocks. This makes it possible for investment opportunities which can generate higher returns on capital compared to that of developed countries. This effect of borrowing is not automatic and can only be effectively

realized if only and only if the borrowed amounts in addition to the locally available funds are invested in productive ventures capable of generating enough returns which can be used to service the debts and eventually pay back the debt. This allows the economy to grow and eventually retire the debts on a timely basis. When this is done over a considerable period of time the tangible benefits of improvements in income per capita which is a precondition for the reduction in poverty is realized.

## **2.2 Causes of Debt Crisis**

The genesis of debt crisis stems from the first oil price shock in 1973. This was at the time the oil producing cartel Organization of Petroleum Exporting Countries (OPEC) laid an embargo on USA and some European countries. This had the adverse effect of leading to a quadrupling of crude oil prices on the world market. As a result OPEC member countries gained from a windfall and had to invest the surplus revenue generated in commercial banks. In the quest to seek investment sources for their largesse funds, these commercial banks made available funds for developing countries ignoring their normal procedures of background checks to ascertain the credit worthiness and the repayment capability of developing countries. On the other hand developing countries and other industrial economies that depend so much on crude oil suffered from huge trade balance deficit.

Because no due diligence was carried out to ascertain the use to which these funds will be put to, much of these funds went into programs and projects that benefited the small elitist to the detriment of the greater impoverished majority. Inflation rates soared in United States and other developed countries. World crude oil prices soared again in 1979 triggered by OPEC. In the meantime, in attempt to control inflation, the United States adopted extremely contractionary monetary policies to reduce inflation. This led to a recession domestically.

This led to a spillover effect on other countries through rising rates and decreased demand for exported goods. The combined effect of all these led to a worldwide recession.

Developing countries were not left out in this state of affairs. In fact they were the hardest hit. Exports were less competitive and thus declined due to high cost of domestic production as well reduction in production in import substitute goods. In the meantime the floating rates on borrowed funds were on the rise thereby leading to a rise of interest payment on borrowed funds especially in Latin American Countries.

In reaction to collapse in commodity prices, African governments, borrowed profoundly from other governments and many-sided banks at both market interest rates and concessional (very low) rates.

### **2.3 Causes of Ghana's External Debt**

The economy of Ghana experienced a decline three decades after attaining independence according to Osei (1995). This decline in growth were very severe in the 1970s and early 1980s. Between 1960 and 1970, the growth rate of output averaged 2.2% per annum. Nonetheless this growth rate was short-lived as it reduced to 0.5% per annum a decade after. By 1970, Ghana transited from a medium income country to a low income due to high population growth rate. An attempt to change Ghana's Agricultural dominated economy contributed immensely to the abysmal growth performance as evidenced by the Governments effort and policies directed at social and economic stimulus through industrialization which was enhanced by producing commodities locally to substitute for imports.

As a result, the manufacturing industry experienced a rapid growth. Between 1957 and 1969 its contribution to GDP grew rapidly from 2% to 9%. The manufacturing sector also contributed immensely (14%) to exports in 1969. This notwithstanding, the quest for industrialization was

biased against the agricultural sector. This is because; no clear cut policy was instituted to link the agricultural sector to the manufacturing sector. The latter relied solely on imported raw materials. This makes the industrialization attempt heavily reliant on foreign exchange. This resulted in the decline of the agricultural sector contribution to GDP from 60% in 1957 to 46% in 1969. The cocoa sector was particularly affected despite employing majority of the labour force. The economy's poor performance was therefore due to the neglect of the agricultural sector particularly the cocoa sub-sector which was a major source of foreign exchange as well as tax revenues for the government.

The desire to industrialize the economy as fast as possible led to the accumulation of huge debts due to the reliance on borrowed funds to finance the hastened industrialization agenda. The nature of the borrowed funds was fast maturing and hence led to debt payment problems at the early stages of post-independence development agenda. By the end of 1965, nearly \$600 million worth of external debt was accumulated and was due for repayment. Nevertheless, external factors and the abandonment of cocoa sector affected Ghana's export earnings and were not able to generate enough revenues to settle the accumulated debts.

Therefore, Ghana had to resort to an agreement to reschedule debt in 1966, 1968 and 1970 all in attempt to deal with the debt repayment crises.

#### **2.4 Trends in Ghana's External Debt**

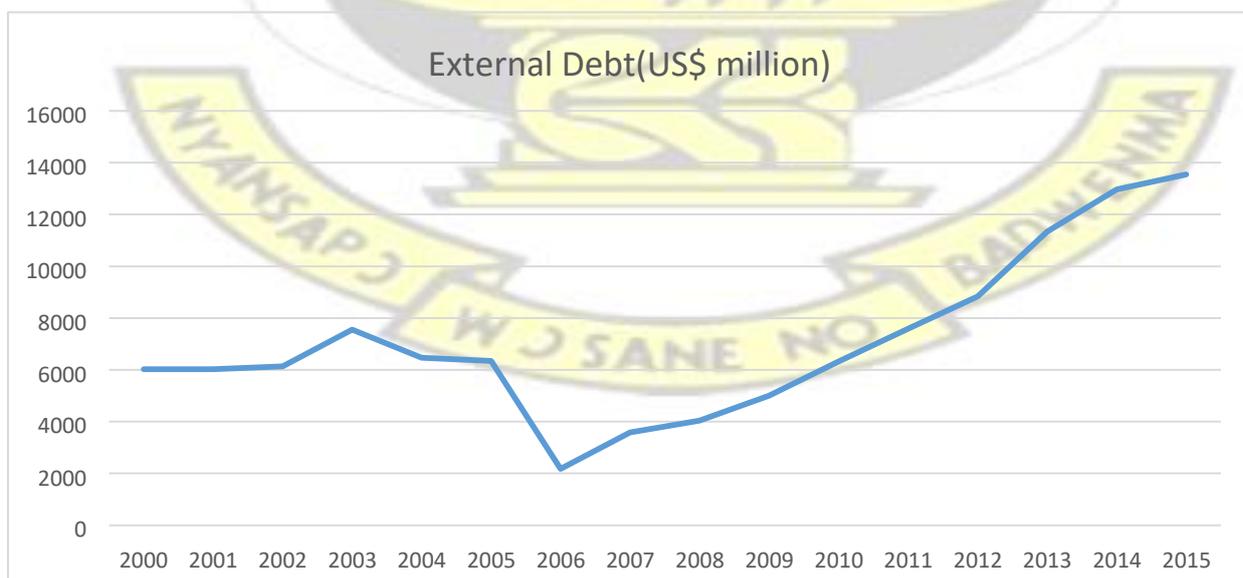
The trend in Ghana's external debt from 2000 to the second quarter of 2015 is presented in Figure 2.1. The total external debt increased from US\$6,021 million in 2000 to US\$ 13,552.65 million as at the end of the second quarter in 2015.

The external debt accumulated in 2000, total witnessed a 25% rise as at the end of 2004. It increased from US\$6,021 million in 2000 to US\$7,549 million as at the 2004. However,

external debt witnessed a decline afterwards mainly due to Heavily Indebted Poor Countries (HIPC) initiative Ghana resorted to. In 2006, external debt was US\$2,177 million representing almost 71.2%.

Multilateral debt constitutes a huge chunk of Ghana’s external debt followed by bilateral debt and commercial debt according to IEA (2012) in absolute terms. Beginning from US\$3,952 million multilateral debt fell by 66.4% during the post-HIPC and MDRI reliefs’ era. It decreased to US\$1,327 million. This however has since experienced an upward surge. As at the end of 2012, multilateral debt was estimated at US\$4,225 million. On the other hand, bilateral debt which started at US\$1,682 million stood at US\$732 million as at the end of 2006 representing a 56% decline. This amount however has also been on the increase.

Furthermore, commercial debt which also set out at US\$388 million declined to US\$118 million as at the end of 2006. This represents a 69.6% decline. This amount however has also been on the increase to US\$1,704 million. By the end of December 2013 was US\$11,341.9 million, indicating 19.3 per cent increases above the levels recorded at the end of December 2012.



**Figure 2.1: Trends in Ghana's External Debt (2000 to 2015Q2)** Source: BoG Quarterly bulletins

## **2.5 Effect of External Debt on Economic growth**

When debt is accumulated within reasonable levels and used effectively it can lead to the enhancement of economic growth. According to Poirson et al., (2004) this growth can be achieved through the accumulation of capital and productivity gains. In an attempt to buoy up growth, developing countries such as Ghana with huge infrastructural deficit borrow to supplement their small levels of domestic capital stocks. This makes it possible for investment opportunities which can generate higher returns on capital compared to that of developed countries. This effect of borrowing is not automatic and can only be effectively realized if only and only if the borrowed amounts in addition to the locally available funds are invested in productive ventures capable of generating enough returns which can be used to service the debts and eventually pay back the debt.

The tendency of external debt accumulation resulting in lower economic growth on investment and economic growth can be better understood using the theory of debt overhang.

A formal definition is provided by Krugman (1988) as the probability that expected debt service costs will dampen additional domestic and foreign investment debt if future debts are likely to be more than the repayment capability of a country. The implication of this is that investors will have the perception that they would have to be taxed by government to provide enough fiscal space in order to be able to service these accumulated debts as well service them. This makes the potential investors to postpone their investment decisions today to the future.

For Eduardo Borensztein (1990) debt overhang is the situation where a country in debts gets very little value from the return to any additional investment because of the debt service obligations. Thus the problem of debt overhang according to Agenor and Montiel (1996) point

towards the kind of dilemma faced by policy makers fixated on solving the debt crisis issue to ascertain whether it is problem of solvency or liquidity. In accordance with Ajayi (1991), countries face the problem of liquidity when they fail to generate sufficient amount of revenues to enable them service the interest on the debts. This is usually a temporary problem.

On the other hand, countries are faced with a solvency problem when their debt repayment capacity is far below their liabilities. This problem is long term in nature. This led Kletzer (1988) to conclude that most developing countries are faced with the solvency problem as evidenced in the fact that the total debt obligations was much higher than the present value of their respective resources.

Savvides (1992) on the other hand posits that in the event that a country in debt fails to repay the accumulated debt, this state of affairs can be associated with the economic condition of the country. The country may have used/planned to use most of its export earnings to repay the debt that is due. The country therefore does not benefit much of its export revenues. In this instance the debt overhang mechanism is synonymous to imposing a marginal tax rate on the country. This will lead to a reduction in the rate of return on invested capital thereby serving as a disincentive to the formation of capital domestically. In a situation where Government is the sole accumulator of external debt, the mechanism remains the same.

This implies that Government policies serve as a disincentive to the formation and domestic capital and leads to decreased consumption levels as most of the benefits accrued are used for the purposes of debt repayments.

Borensztien (1990) categorized the consequence of debt accumulated externally on investment into two broad areas. The debts overhang mechanism and the credit allocating effect. According to him, debt overhang situation occurs when the indebted country lacks the capacity to repay

the debt or service the interest on the debt fully and would have to resort to mediation with creditors to determine actual debt payment which is connected to the economic circumstances of the country at hand. Consequently, most of the increase in output generated must be set aside to repay the debt that is due for repayment. This state of affairs has the tendency to serve as a disincentive to investment by the private sector and charades as a deterrent on the part of government to put in place and pursue the right policy choices.

According to him, the second mechanism through which the accumulation of debts can affect investment level is through the credit allocating mechanism. This occurs when countries due to their inability or willingness to pay previous loan have been tagged as credit risky and therefore find it difficult to access new loan facilities.

So far it appears that the debt overhang concept works through only the reduction in investment channel. It can also manifest itself through lower productivity growth. In that regard, many researchers have advanced for the wider clarification of this theory.

## **2.6 Empirical findings on the effect of external debt on economic growth.**

Following the inception of the debt crisis of the 1980, numerous amounts of researches were carried out to empirically scrutinize the effect of external debt on economic growth. The main findings of these studies have been mixed with some revealing positive effects while others reveal a negative consequences of external debt on the growth of the economy.

In Turkey, Bauerfreund (1989) made use of a computable general equilibrium (CGE) model to investigate the effect of foreign debt cost on the Turkish economy. Drawing on two measures of debt overhang which was independently developed by Sachs (1986) and Feldstein (1986), the author used a multi sector, non-linear general equilibrium model to clarify the concept of debt overhang by adopting two measures of debt overhang. Sachs (1986) was of the view that

when faced with high debt servicing problems, private businesses tend to suffer because countries who are in debt resort to forceful imposition of tax on these businesses with the main objective of securing enough funds or transferring funds to the public sector. The returns on private investment tend to decrease due to the hike in taxes thereby leading to the collapse of the private sector and ultimately reducing investments. Feldstein (1986) on the other hand holds the view that the payment of accumulated debt requires the transfer of hard earned foreign exchange. The study established a negative relationship between payment of external debts and investments. The author attributed the findings to economic policies both internally and externally.

Cunningham (1993) also attempted to empirically scrutinize the nature of the relationship between the burden of accumulated debt and economic growth. The study was conducted on sixteen (16) countries covering the period of 1971-2007. The author found out that, the burden of accumulated debt has negative consequences on the growth of an economy. His argument stemmed from the fact that foreign debt accrued has negative consequences on the productivity of both labour and capital.

Using cross-sectional data on ninety-nine (99) countries Elbadawi *et al.* (1996) also investigated the subject matter to lend empirical support to theory. Based on their findings the authors hold the view that the inflow current debts as a share of GDP, the accumulation of debt in the past, the servicing of debt all influence the economy to grow negatively.

In Sub-Saharan Africa, Iyoha (1999) employed a yearly time series data spanning over the period 1970-1994 to empirically explore the connection concerning external debt and economic growth. The results of the study vividly indicates that the accumulation of external debt

adversely affect investment. Furthermore, the reduction in the amount of debt accumulated was found to enhance investment decisions and therefore the growth of the economy.

In order to buttress the findings of Iyoha (1999), Fosu (1999) also investigated the subject matter by employing an augmented production function in Sub-Saharan Africa. The data span of the study was however limited to the period 1980 to 1990. The results confirm that of Iyoha (1999) and moved on to that the effect on investment levels was very weak.

Chowdhury (1994) refuted the debt overhang argument based on empirical evidence. The paper contends that the cause of decline in economic growth in developing countries cannot be attributed to accumulated external debts. This assertion was buttressed by a study conducted by BulowRogoff (1990) who suggested that the debt overhang argument was merely an exaggeration and suggested the abolishment of debt relief institutions. Their findings however did not receive a warm reception and was therefore ignored. The debt overhang argument was widely accepted. This led to the establishment of Highly Indebted Poor Countries (HIPC) Initiative by the World Bank in 1996 all in attempt to provide and other donors to provide relief to indebted poor countries.

Frimpong and Oteng–Abayie (2006) investigated the influence of external debt on Economic growth in Ghana. The authors were motivated by the fact that most of the studies conducted on the subject rely basically on cross-country regressions and thus have the weakness of not reflecting or explaining enough the actual happenings in a particular country. The authors utilized data covering the period 1970-1999. The methodology applied was based on Johansen cointegration approach and Vector Error Correction Model (VECM).The results of the cointegration test revealed the presence of a long run relationship among the variables. The study revealed that external debt inflows affect growth in GDP positively whiles debt servicing negatively influence GDP growth. This finding reveals the presence of crowding out effect.

The study also revealed the existence of a debt overhang effect through the negative impact of domestic investment on economic growth.

Most of these studies reviewed and many others have analyzed the effect on external debt on economic growth by adopting the cross country approach. Their results therefore only imply the average effect on those countries considered in their studies. Also studies that considered a Ghana in isolation has been have carried out with data spanning relatively short periods.

Given recent developments in Ghana’s debt profile and the availability of recent data, this study intends to build upon the already existing studies by including other growth determining variables and also extend the time span of the data.

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.0 Introduction**

The method employed to carry out the objectives of the study is described in this section. The chapter begins with the specification of the econometric model, goes on to outline the strategy used in estimating the model which includes; test for the presence of unit root, test for the existence of cointegration based on ARDL framework and finally estimating the short and long run parameters of the model.

#### **3.1 Model Specification**

Following Frimpong and Oteng–Abayie (2006) this study makes use of growth incorporating external debt variables and other independent variables as below;

$$Y_t = \alpha_0 + \alpha_1(DOV_t, DOC INV_t, \dots, \alpha_n(POP EXC_t, \dots, \alpha_m)) \dots \dots \dots \quad (3.1)$$

The semi-log specification of the model is as follow;

$$Y_t = \beta_0 + \beta_1 \ln DOV_t + \beta_2 \ln DOC_t + \beta_3 \ln INV_t + \beta_4 \ln POP_t + \beta_5 \ln EXC_t + \epsilon_t \quad (3.2)$$

Where  $Y_t$  is annual real GDP growth rate,  $\beta_0$  is intercept term,  $DOV_t$  is debt overhang (ratio of external debt to GNI ratio),  $DOC$  is debt overcrowding (ratio of Debt service to export),  $INV_t$  is total investment,  $POP_t$  is total population,  $EXC_t$  is the USD- Ghana cedi Exchange Rate and  $\epsilon_t$  is error term.

Total debt to income ratio is used as proxy for debt overhang. A higher debt burden is envisaged when the ratio is high. The study expects total debt GNI ratio to influence economic growth negatively. The study expects external debt to GNI ratio to have a negative influence on economic growth. This is evidenced in the works of Sachs (1989) and Krugman (1988). This situation occurs when the indebted poor countries set aside most of the foreign aid they receive as well as foreign exchange resources to service the debt they have accumulated.

Investment levels in accordance to Solow model of growth have a positive and direct influence on economic growth. This can be accredited to the fact that investment per worker leads to an increase in the amount of the capital accumulated and hence induce economic growth. Therefore the study expects a positive influence of investment on economic growth. Population is expected to cause a decrease in economic growth. This is because capital per worker would decline assuming that the labor force/population increases without any corresponding increase in investment levels as well as no depreciation.

Furthermore, the study expects the USD-Ghana cedi Exchange Rate to have a positive influence on economic growth. This is because an appreciation of the cedi against the dollar decreases

the price of traded goods, which feeds into the general price level rendering a positive real balance effect. This, in turn, will result in higher aggregate demand and output.

### 3.2 Estimation Strategy

The analysis of time series data involves three main stages. The first stage involves testing the order of integration of the variables followed by testing for the existence of a long run relationship among the variables and finally estimating the long and short run parameters of the model as specified in equation 3.2. Detailed descriptions of these steps are as follows:

#### 3.2.1 Test for the existence of Unit Root

Most macroeconomic variables tend to be trended either upward or downward and thus are usually not stationary. Any analysis based on this non-stationary series tends to produce spurious regression results. To avoid the problem of spurious result, this study makes use of the traditional Augmented Dickey Fuller (ADF) and Philips-Perron (PP) tests to ascertain the order of integration of the variables.

The ADF test for unit root requires the estimation of equation of the form:

$$\Delta y_t = \alpha + \beta t + \sum_{i=1}^k \gamma_i \Delta y_{t-i} + \epsilon_t \quad (3.3)$$

$y_t$  is a vector for the time series variables in a particular regression. With respect to this study it is the variable under consideration.  $t$  represents time trend,  $\Delta$  represents the first difference operator,  $\epsilon_t$  is the error term and  $P$  represents the optimal lag length.

The ADF test for unit root is based on the null hypothesis that the series possess a unit root as against the general alternative that the series in question does not possess a unit root and thus is stationary. The acceptance of the null hypothesis implies that the series has a unit root and

hence non-stationary. Similarly, rejection of the null hypothesis of unit root implies the series is stationary.

The PP test for unit root is also grounded on the null hypothesis that the series possess a unit root as against the alternate that the series in question is stationary. Similarly the acceptance of the null hypothesis implies that the series has a unit root and hence a non-stationary while the rejection of the null hypothesis of unit root implies the series is stationary.

### **3.2.2 Test for Cointegration**

As stated earlier, conducting an empirical research with time series can lead to problem of spurious regressions. One potential means of attaining stationarity is to difference the series until stationarity is obtained. Nevertheless this approach is not without shortfalls. One shortfall is that, if we difference the variables the model can no longer give a unique long run solution (Asteriou and Hall, 2007).

Cointegration provides appropriate statistical techniques to investigate if there is an economically significant long-run relationship between the variables even if they are nonstationary.

A long-run equilibrium relationship between the variables is an indication that these variables move collectively over time so that short term shocks from the long term development will be corrected. The absence of cointegration between these variables implies no long run equilibrium relationship and as a result these variables will drift randomly from themselves. The presence of the long-run equilibrium relationship between the variables indicates that linear combinations in non-stationary series have become stationary (Engle and Granger, 1987).

### 3.2.2.1 Bounds Testing Approach

The existence of a long run relationship was explored by making use of bounds testing approach which is based on ARDL and developed by Pesaran *et al.* (2001). This procedure has the added advantage of been applied no matter whether or not the variables are found to be I(0) or I(1), as compared to alternatively widely used cointegration techniques which needs all of the explanatory variables to be integrated of a similar order.

According to Ghatak and Siddiki (2001), when dealing with small sample size then the bounds test procedure becomes the preferred choice as compared to the large sample required by Johansen co-integration techniques. To enable the researcher implement the cointegration procedure based on the bounds test, a (conditional) version of the ARDL model is estimated to test for the existence of a long-run relationship between economic growth and its determinants as follows;

$$\Delta Y_{it} = \alpha_0 + \alpha_1 Y_{it-1} + \alpha_2 \ln DS_{it-1} + \alpha_3 \ln DOV_{it-1} + \alpha_4 \ln DOC_{it-1} + \alpha_5 \ln INV_{it-1} + \alpha_6 \ln TB_{it-1} + \alpha_7 \ln POP_{it-1} + \alpha_8 \Delta Y_{it-1} + \alpha_9 \Delta \ln DS_{it-1} + \alpha_{10} \Delta \ln DOV_{it-1} + \alpha_{11} \Delta \ln DOC_{it-1} + \alpha_{12} \Delta \ln INV_{it-1} + \alpha_{13} \Delta \ln EXC_{it-1} + \alpha_{14} \Delta \ln POP_{it-1} + \epsilon_{it} \dots \dots \dots 3.4$$

Where all variables are as previously defined and  $\Delta$  is the first difference operator.  $\alpha_i$  are the long run multipliers in the ARDL model,  $\alpha_0, \alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6, \alpha_7, \alpha_8, \alpha_9, \alpha_{10}, \alpha_{11}, \alpha_{12}, \alpha_{13}, \alpha_{14}$  and  $\alpha$  denote the short-run dynamics of the model to be estimated based on the error correction framework.  $\alpha_0$  is the constant term and  $\epsilon_{it}$  is white noise error term.

The first step in the *ARDL* bounds involves estimating equation 3.4 using ordinary least squares (*OLS*) estimator to be to test for the existence of a long-run relationship among the variables. The researcher then has to conduct an F-test to test for the joint significance of the lagged coefficients of the variables in question, i.e.

$$H_0: \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = \alpha_6 = \alpha_7 = 0 \text{ as against the alternative}$$

$$H_0: \alpha_1 = \alpha_2 = \alpha_3 = \alpha_4 = \alpha_5 = \alpha_6 = \alpha_7 = 0$$

The test which normalizes on  $Y$  is denoted by  $F_{YDS DOV DOC INV EXC POP_Y}(\dots)$

The test is based on the bounds of two asymptotic critical values for cointegration when the independent variables are  $I(d)$  (where  $0 \leq d \leq 1$ ): A purely upper value of the form  $I(1)$  regressors and a lower value also of the form  $I(0)$  means the independent variables are  $I(d)$ , (where  $0 \leq d \leq 1$ ). This phenomenon comes about when a pair of critical values bounds of asymptotical nature contributes a test for cointegration. From the test, the F-statistics is shown to be above the upper critical value, thus the null hypotheses of no long-run relationship can be rejected regardless of the orders of integration for the time series. On the other hand, the null hypothesis cannot be rejected if the test statistic falls below the lower critical vale. Lastly, the results is declared inconclusive if the statistics falls between the lower and upper critical vale

In the second stage of the *ARDL* bounds approach, as soon as the existence of a long run relationship is established the conditional *ARDL* ( $p, q_1, q_2, q_3, q_4, q_5, q_6$ ) which is the longrun model can be formulated as follows:

$$p \quad q_1 \quad q_2 \quad q_3 \quad q_4 \quad q_5$$

$$Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \alpha_2 \ln DS_t + \alpha_3 \ln DOV_t + \alpha_4 \ln DOC_t + \alpha_5 \ln INV_t + \alpha_6 \ln TB_t + \alpha_7 \ln POP_t + \epsilon_t \dots 3.5$$

This involves selecting the orders of the ARDL ( $p, q, q, q, 1, 2, 3, 4$ ) model making use of Akaike Information Criterion (AIC).

The third and ultimate step, involves obtaining the short-run dynamic parameters which can be done by estimating an error correction model connected to the long-run estimates. This is specified as follows:

$$\Delta Y_t = \alpha_0 + \alpha_1 \Delta Y_{t-1} + \alpha_2 \Delta Y_{t-2} + \alpha_3 \Delta DS_{t-1} + \alpha_4 \Delta DOV_{t-1} + \alpha_5 \Delta DOC_{t-1} + \alpha_6 \Delta INV_{t-1} + \alpha_7 \Delta TB_{t-1} + \alpha_8 \Delta POP_{t-1} + \alpha_9 IECT_{t-1} + \epsilon_t \dots 3.6$$

$\alpha_0, \alpha_1, \alpha_2, \alpha_3, \alpha_4, \alpha_5, \alpha_6, \alpha_7, \alpha_8$  and  $\alpha_9$  denotes the model's convergence to equilibrium associated with the short-run dynamic and  $\alpha_9$  is the adjustment speed to long-run equilibrium after the system has experienced a shock.

### 3.3 Data Source and Description of Variables

The study makes use of data covering the periods of 1970 to 2013. The data is sourced from World Bank, World Development Indicator, (WDI) and International Debt statistics, (IDS).

The variables are described as Y – GDP (Economic growth), DOV – Debt Overhang, DOC – Debt Overcrowd, INV – Domestic Investment, POP – Population and EXC – Ghana Cedi/US Dollar Exchange rate.

## CHAPTER FOUR

### DATA PRESENTATION, ANALYSIS AND DISCUSSIONS

#### 4.0 Introduction

This chapter presents the data and discusses the results of the study in line with the objectives of the study. Specifically, the chapter begins with summary statistics of the data, the results of the order of integration of the variables used in the study and then proceeds to present and discuss the result of the cointegration test. The long and short run parameters are also presented and discussed. The chapter ends with the goodness of fit and diagnostic tests of the ARDL model.

#### 4.1. Summary Statistics of the Data.

Variables	Mean	Median	Max	Min	SD	Skew	Kurt	JB	Prob
GDP	3.87	4.75	15.00	-12.43	4.78	-1.15	5.36	19.9	0.000046
INV	16.10	15.10	31.13	3.53	7.79	0.06	1.76	2.83	0.24
EXC	41.20	4.50	220.00	0.01	59.00	136.00	384.00	1490.00	0.05
POP	2.56	2.58	3.48	1.60	0.40	-0.03	3.50	0.46	0.79
DOV	54.84	43.16	129.31	18.13	30.92	0.80	2.61	5.2	0.081
DOC	17.67	16.68	54.71	3.17	12.58	1.05	3.98	8.85	0.0059

Table 4.1 summarizes descriptive statistics of the variables used in the study. Over the sample period, the mean of real GDP growth rate is 3.877. Real GDP growth rate varies between 4.75 and 15. The degree of variability is also witnessed by the standard deviation. Real GDP growth rate deviates from its mean on average by 4.78. Overall, negative skewness and kurtosis collectively result in a non-normal distribution, as indicated by the Jarque–Bera test statistic and the associated probability value. Total domestic investment is on average estimated at

16.10 over time. The data vary between 3.5 and 31. The range of variation causes the data to deviate from the sample mean 7.79. A positive skewness (with the asymmetry coefficient standing at 0.06) and kurtosis (with the value of kurtosis standing at 1.76) is observed.

Subsequently, the Jarque–Bera test statistic provides strong evidence of non-normality in the data. The cedi-dollar exchange rate averages 41.20. The values range between 0.01 and 220.00 with a standard deviation estimated at 59.00 over the sample period. It is positively skewed (136) and leptokurtic (384). Therefore, the Jarque–Bera test statistic unambiguously rejects the null of normality in the data. Also, population on average grew at a rate of 2.56% over the sample period and ranges from 1.60% to 3.48%. Population growth rate deviates from its mean on average by 0.40. It is negatively skewed and leptokurtic. Overall, negative skewness and kurtosis collectively result in a normal distribution, as indicated by the Jarque–Bera test statistic and the associated probability value. External debt to GNI ratio (DOV) on the other hand averages 54.84. The values range from 18.13 and 129.31, with the standard deviation estimated at 30.91. It is positively skewed (0.80) and leptokurtic (2.61). The Jarque–Bera test statistic, therefore, unambiguously rejects the null of normality in the data.

Lastly, debt service to export ratio (DOC) on the other hand averages 17.67. The values range from 3.17 and 54.71, with the standard deviation estimated at 12.58. It is positively skewed (1.05) and leptokurtic (3.98). The Jarque–Bera test statistic, therefore, unambiguously rejects the null of normality in the data.

#### 4.2 Test for Unit root

The study first tested for the order of integration of the variables in order to determine whether that is stationary or not. This is because most macroeconomic variables are trended and any analysis based on them could lead to spurious results. The results of the unit root test based on ADF and PP are presented in Table 4.2. **Table 4.2: Results of the Unit root test**

	ADF	P
.....		

Variables	Constant	Constant	Constant	Constant
	No trend	Trend	No trend	Trend
<b>LEVEL</b>				
GDP	-3.468***	-5.613***	-4.260***	-5.776***
lnINV	-1.131	-2.597	-1.229	-2.531
lnEXC	-0.632	-1.438	-0.821	-1.269
lnPOP	-7.428***	-7.330***	-2.047	-2.061
lnDOV	-1.822	-1.534	-1.646	-1.400
lnDOC	-0.643	-1.789	-0.863	-1.523
<b>FIRST DIFFERENCE</b>				
GDP	-7.956***	-7.838***	-8.658***	-8.570***
lnINV	-6.210***	-6.318***	-6.657***	-6.598***
lnEXC	-4.258***	-4.413***	-5.943***	-5.883***
lnPOP	-8.983***	-8.975***	-2.789*	-2.933**
lnDOV	-3.643***	-3.684**	-5.920***	-6.041***
lnDOC	-4.712***	-4.700***	-6.261***	-6.189***

\*, \*\* and \*\*\* means rejection of null hypothesis at 10%, 5% and 1% levels respectively.

From Table 4.2 it can be seen that in exception of GDP and population growth rates, all the other variables are not stationary. This is because the study fails to reject the null hypothesis of unit root based on both the ADF and PP tests. The economic implication of unit root is that, once any of the variables experiences a shock, the effects will be long-lasting and estimations based on non-stationary variables are very likely to lead to the production of spurious results.

The variables were first differenced and the unit root test conducted based on the ADF and PP. The ADF and PP test with constant and with trend shows that all the variables are stationary since the test statistic is significant and therefore the null hypothesis of unit root is rejected.

Since the unit root test has confirmed the absence of  $I(2)$  variables, the *ARDL* methodology can now be applied.

#### 4.3 Test for the existence of a long run Relationship

As indicated in the methodology section, a test establishing the presence of a relationship in the long run relationship is the first to be carried out when conducting an analysis based on *ARDL*. In order for this to be done, one needs to select the required maximum lag length since the *F*-statistic to be computed is sensitive order of lags selected. This study therefore selects a maximum lag length of one (1) based on *AIC*. According to Lütkepohl (2006), the *AIC* is superior for small sample. The results of the bound test procedure for establishing the existence of a long run relation between economic growth and its determinant are presented in Table 4.3.

**Table 4.3 Results of the Bounds test for Cointegration**

Critical bounds of the <i>t</i> -statistic: intercept and no trend						
K	90 %		95%		99%	
	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
5	2.276	3.297	2.694	3.829	3.674	5.019
<b>Computed F-Statistic</b>	6.478		<u>Decision</u>			
<b>Cointegrated</b>						

Note:\*\*,\*\* means significant at 5% and 1% respectively. Critical values were obtained from Narayan (2004),Appendix A1-A3, pp.26-28. K is the number of regressors.

The result indicates that the *F*-statistic is above the 1%, 5% and 10% lower and upper critical bounds value. This implies that the hypothesis of null which states that, there is the absence cointegration is rejected; the study has revealed that there is the existence of a long run relationship among the variables.

#### 4.4 Long Run Relationship

After revealing that there is the existence of a long run relationship among the variables, the study proceeded to estimate the exact nature of the long run relationship. The results of the long run relationship are shown in Table 4.4.

**Table 4.4: Results of the long Run Relationship**

ARDL(1,1,1,1,0,1 ) selected based on AIC Dependent variable: Y

Regressor	Coefficient	Standard error	T-ratio
lnDOV	-11.196***	3.1376	-3.568
lnDOC	-18.704***	4.6244	-4.0445
lnINV	8.513***	1.958	4.346
ln POP	13.892***	3.0077	4.618
lnEXC	4.947	3.686	1.342

\*\*\* means significant at the 1% level

From Table 4.4, it can be seen that all the variables are significant in exception of exchange rate in the long run. Specifically, the external debt-GNI ratio (DOV) – a measure for debt overhang is correctly signed (i.e. negative) and significant at the 1% level. A 1% increase in debt-GNI ratio leads to a reduction in GDP growth rate by 0.11% in the long run. This implies a higher debt burden leads to a reduction in economic growth in Ghana. The debt overhang effect operate in a similar function as that of like a marginal tax rate imposed on the economy which pull down the returns to investment as well as serving as a disincentive to investment thereby depressing economic growth.

The coefficient of debt service-export ratio (DOC) - a measure for debt overcrowding was found to be negative. This is statistically significant at the 1% level. When debt serviceexport ratio experiences a 1% increase, it leads to a decrease in GDP growth by 0.18%.This result implies the existence of a debt overcrowd situation in Ghana. According to Krugman (1988)

and Sachs (1989) this situation is the case when expected debt service costs will dampen additional domestic and foreign investment debt if future debts are likely to be more than the repayment capability of a country. The implication of this is that investors will have the perception that they would have to be taxed by government to provide enough fiscal space in order to be able to service these accumulated debts as well service them. This makes the potential investors to postpone their investment decisions today to the future.

The negative effect of debt service-export ratio is to depress investment and hence productivity. A great amount of export revenues and new borrowings are used to service the high debt requirement. Before Ghana adopted the HIPC initiative in 2001, she had to borrow more from external sources especially from IMF non-concessionary window in order to be able to service its debt burden (BoG, 2005).

In the long run, the coefficient of domestic investment was found to be positive and significant at the 1% level. A 1% rise in domestic investment leads to an upsurge in economic growth by 0.08%. The finding is in tandem with the Solow growth model. This is because investment has the potential to cause a rise in the amount of capital accumulated and this will in turn induce economic growth. The findings however contrast that of Frimpong and Oteng– Abayie (2006) who found a negative effect of domestic investment on economic growth in Ghana.

The population growth rate also has a positive effect on economic growth in Ghana. This was found to be statistically significant at the 1% level in the long run. This result is contrary to the negative effect expected. A 1% rise in the growth rate of population in the long run leads to an upsurge in GDP growth rate by 0.13%. This result can be attributed to the fact that population is aiding and expanding the growth of various sectors of the economy by providing them with the human capital needed.

#### 4.5 Short Run Relationship

After estimating the long run relationship, the study continued to estimate the short run determinants of economic growth in an error correction model based on the ARDL frame work.

The results are shown in Table 4.5.

**Table 4.5 Estimates of the Short Run Relationship**

Regressor	Coefficient	Standard error	T-ratio
lnDOV	-3.95	2.943	-1.344
lnDOC	-14.90***	3.848	-3.875
lnINV	3.912*	2.183	1.792
ln POP	-3.642	6.6062	-0.5513
lnEXC	20.439***	4.535	4.5067
ECT <sub>-1</sub>	-0.842***	0.1186	-7.1039

\*and\*\*\* means significant at the 10% and 1% levels respectively

The lagged error correction term (ECT) represents the speed which the model adjusts to an equilibrium when it experienced a shock. From the results it can be seen that the ECT is negative and statistically significant at 1% level.

The coefficient of the error term is -0.84 which suggests that 84% of the previous year's disequilibrium is corrected in the current year.

Domestic investment and debt service-export ratio (DOC) in the short run maintained their signs and are statistically significant at the 10% and 1% level respectively. The external debt to GNI ratio (DOV) was found to be insignificant statistically although correctly signed. The exchange rate however has a significant influence on economic growth in the short run.

A 1% increase in debt service-export ratio leads to a reduction in the GDP growth by 0.15% in the short run. This implies that the debt overhang effect is lower in the short run than in the

long run. This could mean that because of the long term nature of our external debts, GDP growth becomes less responsive in the short run.

A 1% increase in domestic investment in the short run also leads to a 0.04% increase in economic growth. Economic growth is also less responsive to investment in the short run.

Exchange rate has a positive influence on economic growth in the short run. Specifically a 1% appreciation of the cedi against the dollar leads to an increase in economic growth by 0.20% in the short run. This result suggest that an appreciation of the cedi against the dollar decreases the price of traded goods, which feeds into the general price level rendering a positive real balance effect. This, in turn, will result in higher aggregate demand and output.

#### 4.6 Goodness of Fit and Model Diagnosis

The significance of the variables and other diagnostic tests such as normality, functional form, and serial correlation among others are conducted in order to check the estimated ARDL model. The results are presented in Table 4.6.

**Table 4.6: Result of Goodness of Fit and Model Diagnosis tests**

<b>Goodness of fit</b>	
R-Squared	0.555499
R-Bar-Squared	0.4165
S.E. of Regression	3.6309
F-Stat.	3.999 [0.0013]
Akaike Info. Crit	5.633
Schwarz Bayesian Criterion	6.083
DW-statistic	2.046
Residual Sum of Squares	421.884
<b>MODEL Diagnostics</b>	<b>Test statistic</b>
$\chi^2_{Auto}$	0.226788(0.8928)
$\chi^2_{Norm}$	0.5388(0.7638)
$\chi^2_{Reset}$	0.2549(0.160)

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Note: Probability values in parenthesis

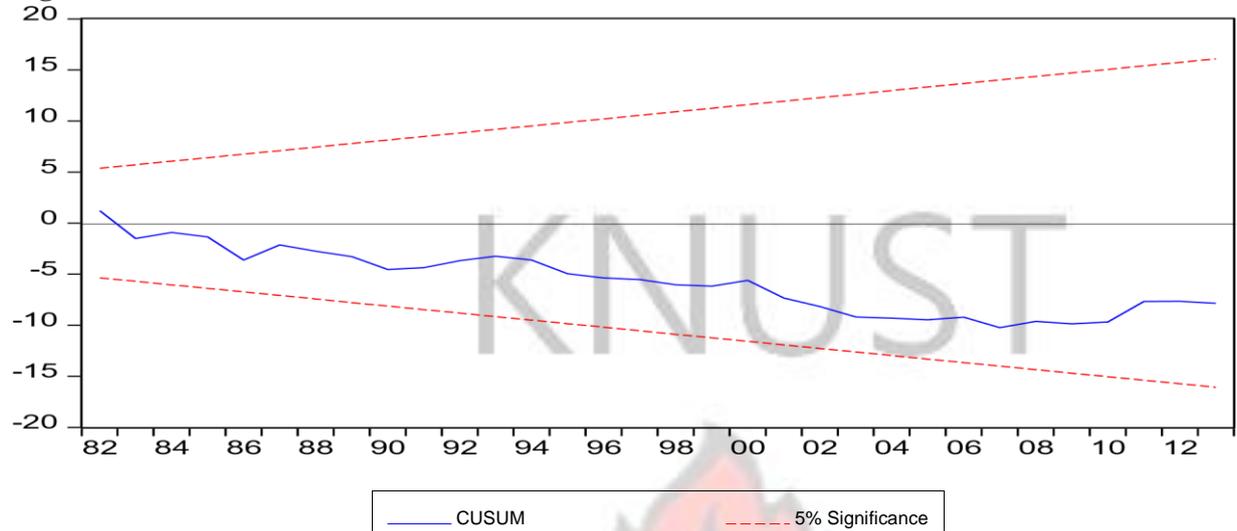
The results show that 56% of the variation in GDP growth rate is explained by the external measures and other growth determinants. The F-statistic is also significant at 1% level indicating that the regressors jointly explain the regressand. The diagnostic test also shows that there is no evidence of autocorrelation and the residuals are normally distributed. The model also passed the RESET test for correct specification of the model and the ARCH for heteroskedasticity. They all have probability values above 10%. These results speak well of the model and therefore appropriate for policy formulation.

#### 4.7 Stability test

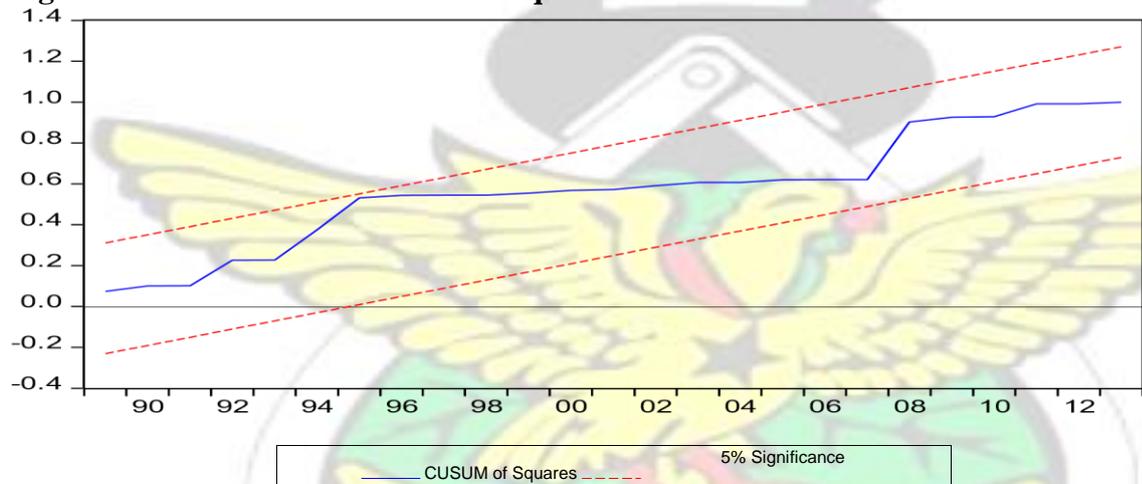
In order to test for the stability of the parameters of the model, Brown *et al.* (1975) recommended the use of cumulative sum of recursive residuals (CUSUM) and the CUSUM of square (CUSUMSQ). These two tests are based on the hypothesis of null that the vector coefficient does not vary and is therefore constant in all periods as against the alternative of the vector coefficient being varied (Bahmani-Oskooee, 2002). One can only fail to reject the hypothesis of null if and only if the plot of these statistics remains within the critical bounds at the 0.05 significance level.

(Bahmani-Oskooee, 2002). The plots of both CUSUM and CUSUMSQ are shown in Figures 4.4.1 and 4.4.2 respectively.

**Fig 4.4.1 Plot of Cumulative Sum of Recursive Residuals for ARDL model**



**Fig 4.4.2 Plot of Cumulative Sum of Squares of Recursive Residuals for ARDL model**



From the figures, it can be seen that both plot of the residuals of *CUSUM* and *CUSUMQ* remains within the confines of the plot. This suggests that the stability of the parameters has endured within its critical bounds of parameter stability. The stability of the ARDL model is therefore confirmed.

## CHAPTER FIVE SUMMARY OF MAJOR FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

## **5.0 Introduction**

This chapter summarizes the main findings of the study in line with the objectives and then proceeds to draw conclusions based on the main findings of the study. The chapter also proposes some policy recommendations based on the conclusions.

### **5.1 Summary of Major Findings**

The study confirmed the presence of a long run relationship concerning external debt and economic growth. In the long run, the external debt-GNI ratio (DOV) was correctly signed (i.e. negative) and significant at the 1% level. The debt service-export ratio (DOC) was also found to have a negative and statistically significant effect on economic growth at the 1% level. The effect of the debt service-export ratio (DOC) was however severe in the short run than the debt service-export ratio (DOC) in the long run. In the long run, gross domestic investment and population growth rate were also found to significantly affect economic growth.

In the short run, the debt service-export ratio (DOC) was again found to have an indirect influence on economic growth. This was significant at the 1% level. Gross domestic investment and exchange rate were also found to have a significant influence on economic growth in the short run.

### **5.2 Conclusion**

The focal objective of the study is to investigate the effect of external debt on economic growth in Ghana through the debt overhang and debt overcrowding mechanisms. The study made use of yearly time series data sourced from World Bank, World Development Indicators and International Debt Statistics covering the periods of 1970 to 2013. The variables used are GDP, INV, EXC, POP, DOV, and DOC as annual real GDP growth rate, total investment, USD-Ghana cedi Exchange Rate, total population, debt overhang (external debt to GNI ratio), and

debt overcrowding (Debt service to export ratio) respectively. The study tested for the order of integration of the variables using ADF and PP unit root tests before proceeding to ascertain the possibility of a long run relationship among the variables using the bounds test of cointegration based on the ARDL.

The significant role that external debt can play in an economy cannot be exaggerated. External debt when applied and utilized judiciously can enhance economic growth. This depends on the ability of countries to effectively invest these resources into projects that can add value to the economy and can generate returns capable of servicing the loans and eventually paying back the debts. However the reverse tends to be the norm where most developing countries lack the capacity to repay these debts since they were not put to any judicious use. From the main findings, it can be concluded that economic growth and external debt move together in the long run and thus have a mutual trend. Also external debt reduces economic growth in Ghana through the debt overcrowd and debt overhang mechanisms in the long run whereas, foreign income and export revenues are used to service external debt thereby reducing domestic investment.

### **5.3 Recommendations**

The study proffer the following policy recommendations, Ghana should take fiscal consolidation and discipline measures to ensure that external debt are kept at levels at par with our debt servicing mechanisms. Also, our debt servicing mechanism needs to be revised to ensure that projects that are financed with external loans should be capable of generating returns which should be used to finance these loans. Since it was found out that domestic investments spurs growth, it is recommended that more resources should be invested in the domestic economy.

Also efforts should be made to diversify our export base especially concentrating on nontraditional export crops such as cashew to generate enough foreign exchange as this will help in strengthening the value of the cedi against the dollar.

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