

**KWAME NKRUMAH UNIVERSITY OF SCIENCE AND TECNOLOGY,  
KUMASI, GHANA**

**KNUST**

**The Effects of Short- Term Foreign Debt Flows and Debt Servicing On  
Economic Growth in Ghana**

**(1990 – 2012)**

**By**

**ANSAH-OFFEI MICKMAS**

**Bed (Hons)**

**A thesis submitted to the Department of Economics, Kwame Nkrumah  
University of Science and Technology in partial fulfillment of the requirements  
for the award of MASTER OF SCIENCE DEGREE IN ECONOMICS**

**MAY, 2016**

## DECLARATION

I hereby declare that this dissertation is the result of my original work and that no part of it has been accepted for the award of another degree in any university or elsewhere except where due acknowledgement has been made in the text.

# KNUST

**ANSAH – OFFEI MICKMAS** .....  
(PG 2725614) **Signature** **Date**

**Certified by:**

**DR. OTENG – ABEYIE ERIC** .....  
(Supervisor) **Signature** **Date**

**Certified by:**

**MR. APPIAH NKRUMAH** .....  
(Internal Supervisor) **Signature** **Date**

**Certified by:**

**DR. YUSIF HADRAT** .....  
(Head of Department) **Signature** **Date**

## LIST OF ABBREVIATION

DSF – Debt Sustainability Framework

GDP – Gross Domestic Product

GNP – Gross National Product

HIPC – Heavily Indebted Poor Countries

IBRD – International Bank for Reconstruction and Development

IMF – International Monetary Fund

LDC – Less Developed Countries

MDRI – Multilateral Debt Relief Initiative

ODA – Official Development Assistance

UNCTAD – United Nations Conference on Trade and Development

USAID – United States Agency for International Development

WDI – World Development Indicators

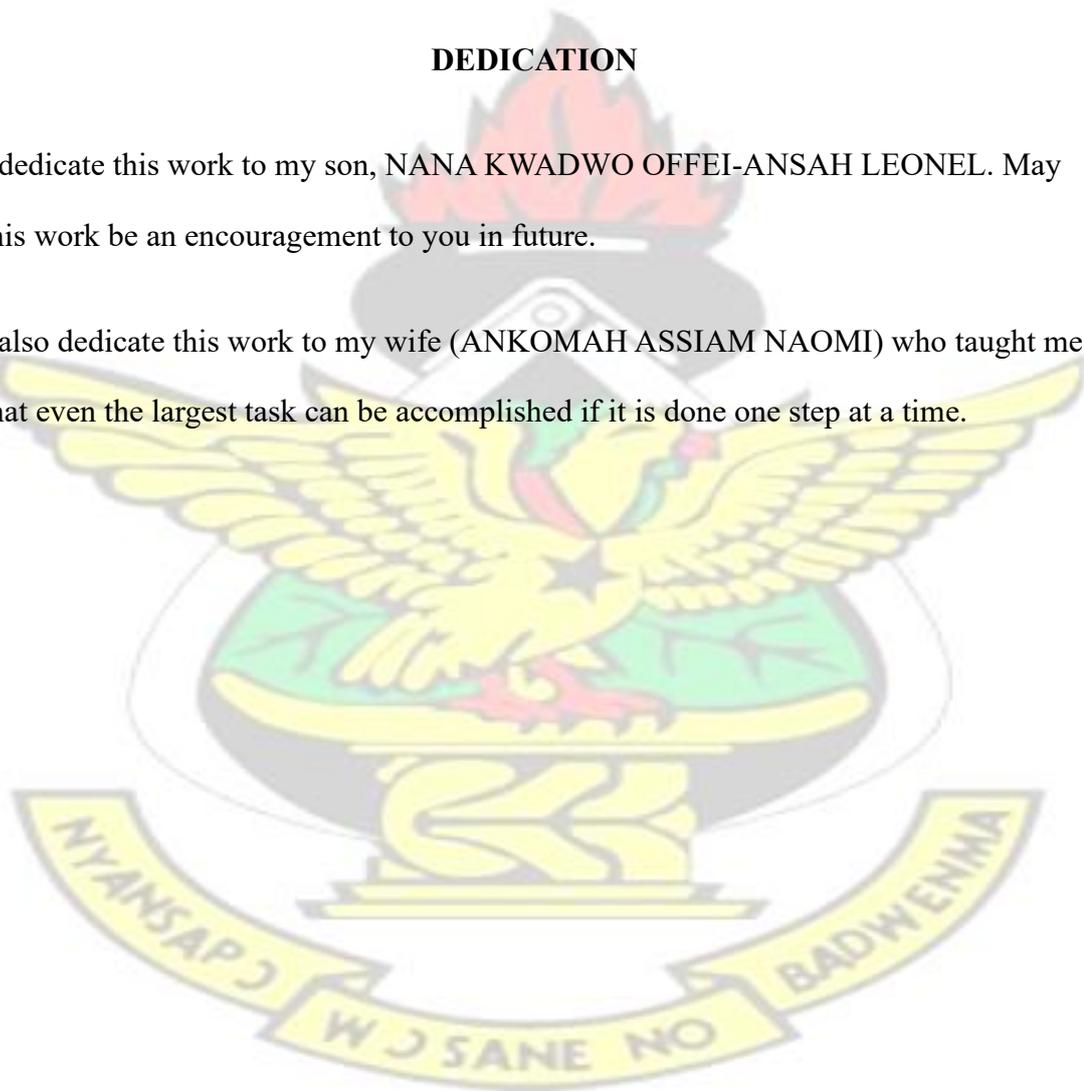


# KNUST

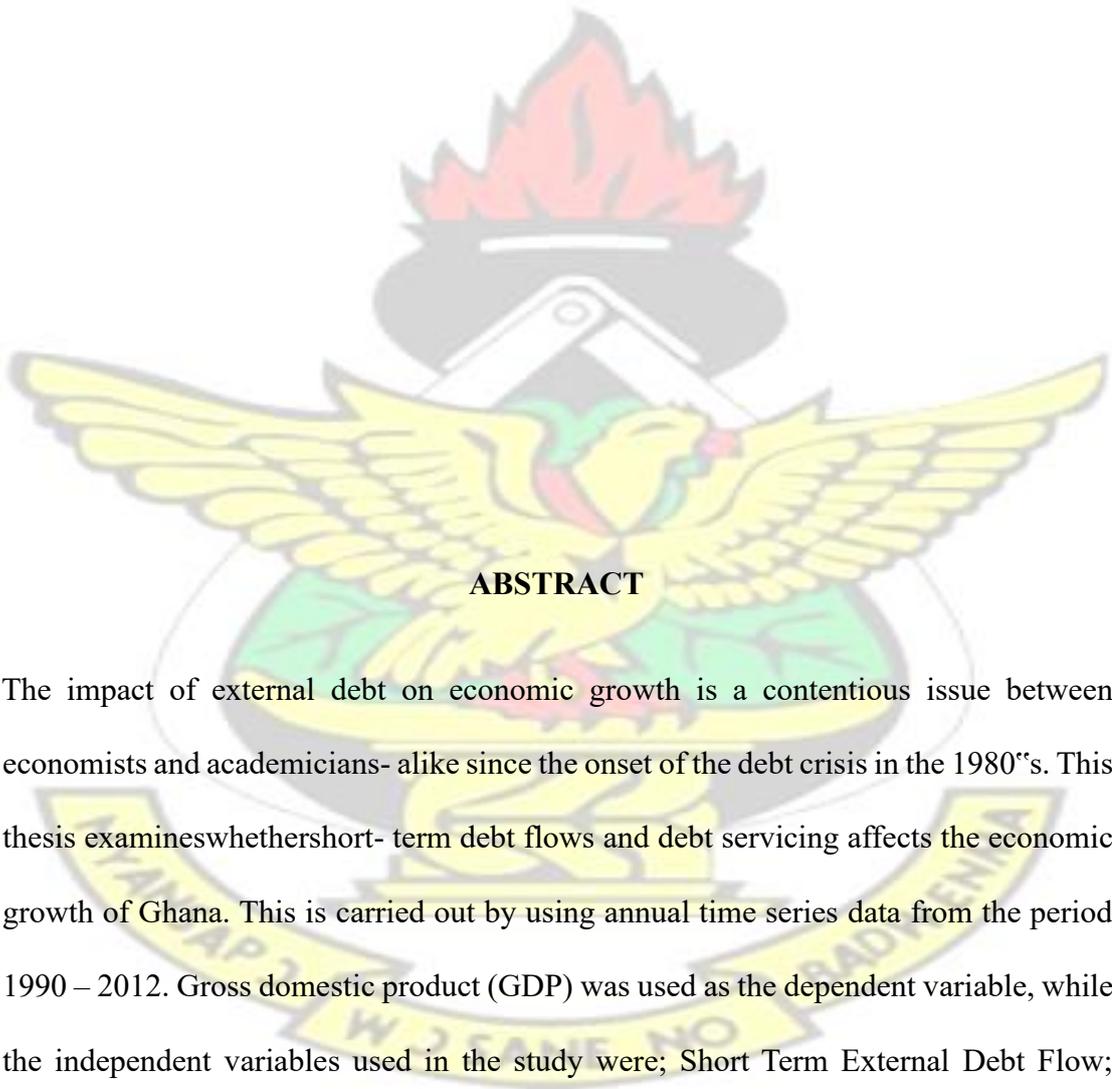
## **DEDICATION**

I dedicate this work to my son, NANA KWADWO OFFEI-ANSAH LEONEL. May this work be an encouragement to you in future.

I also dedicate this work to my wife (ANKOMAH ASSIAM NAOMI) who taught me that even the largest task can be accomplished if it is done one step at a time.



# KNUST



## ABSTRACT

The impact of external debt on economic growth is a contentious issue between economists and academicians- alike since the onset of the debt crisis in the 1980's. This thesis examines whether short- term debt flows and debt servicing affects the economic growth of Ghana. This is carried out by using annual time series data from the period 1990 – 2012. Gross domestic product (GDP) was used as the dependent variable, while the independent variables used in the study were; Short Term External Debt Flow; Gross Fixed Capital Formation; and Labour Force Participation Rate. Two models were stated to examine the two objectives; Model 1 investigated the debtflows-economic-growth relationship while Model 2 investigated the debt-servicingeconomic-growth

relationship. The ARDL bounds test technique was adopted to investigate cointegration in both models. The ARDL results showed cointegration among variables in Model 1 but no such evidence was obtained for variables in Model 2. The results indicate that GDP growth is influenced positively by short term flows and negatively by debt servicing.

# KNUST



# KNUST



## **ACKNOWLEDGEMENTS**

I whole heartedly give honour, glory and praises to the LORD ALMIGHTY for his mercies and grace upon my life throughout my university education, and without which this work would not have come into being.

I am grateful to Dr. E.F OTENG-ABAYIE and Mr. Appiah Nkrumah my supervisors, for their invaluable guidance, suggestions, constructive criticisms, and helpful study materials recommended that greatly augmented this work. I say to my supervisor: “May the Lord richly bless you”.

Special thanks to Dr. Eric Arthur, Dr. Jacob Novignon, my parents, siblings, and relatives who during my studies also gave me support and encouragement.

Many people have also been very helpful in putting this dissertation together. While I cannot name them all, I say a very big thanks to you all.

# KNUST



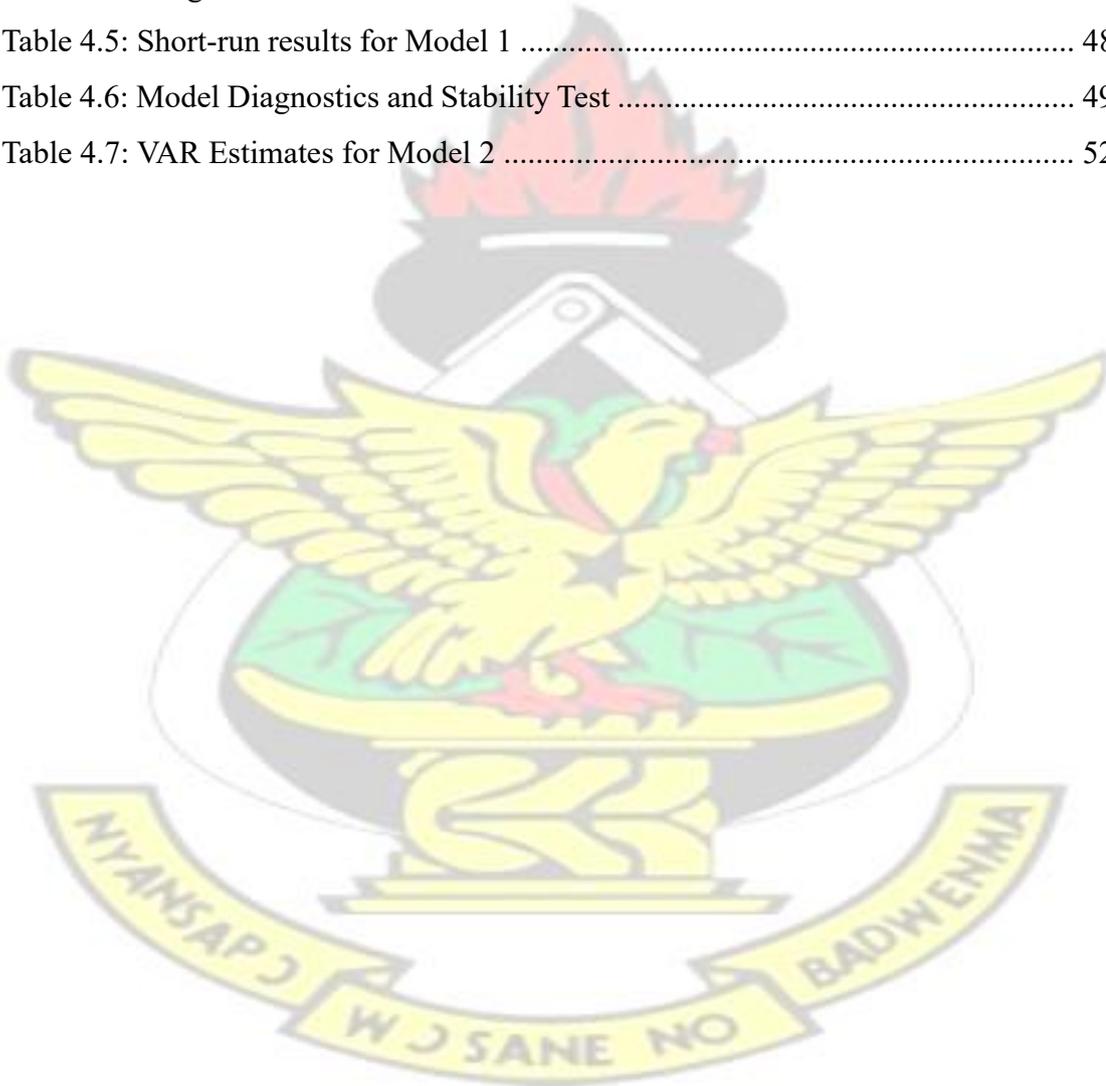
## TABLE OF CONTENTS

Content	Page
<b>DECLARATION</b> .....	i
<b>DEDICATION</b> .....	iii
<b>ABSTRACT</b> .....	iv
<b>ACKNOWLEDGEMENTS</b> .....	vi
<b>TABLE OF CONTENTS</b> .....	viii
<b>LIST OF TABLES</b> .....	x
<b>CHAPTER ONE</b> .....	1
<b>INTRODUCTION</b> .....	1
1.0 Background to the study .....	1
1.1 Statement of Problem .....	4
1.2 Objectives of the Study.....	6
1.3 Statements of hypotheses.....	6
1.3.1 Hypothesis I.....	6
1.4 Research Methodology .....	6
1.5 Significance of the study .....	7
1.6 Delimitation of the study .....	7
1.7 Scope of the study.....	7
1.8 Organization of Chapters .....	8
<b>CHAPTER TWO</b> .....	9
<b>LITERATURE REVIEW</b> .....	9
2.0 Introduction.....	9
2.1 The Theoretical Review.....	9
2.1.1 Solow Growth Model .....	10
2.1.2 The Solow Diagram and the Production Function .....	12
2.1.3 Investment rate changes and the Solow growth model .....	14
2.1.4 Population Growth rate and Solow growth model .....	15
2.1.5 Technology and the Solow growth model .....	15
2.2 Definition of Terms.....	15
2.3 Empirical Review .....	23
2.3.1 Empirical evidence from Ghana.....	31

2.4 Debt Profile and Sustainability Analysis in Ghana.....	32
2.4.1 External debt.....	32
2.5 External debt service .....	34
<b>CHAPTER THREE</b> .....	36
<b>METHODOLOGY</b> .....	36
3.0 Introduction.....	36
3.1 Type of Study.....	36
3.2 Method of data collection .....	37
3.3 Data Analysis and Estimation Technique .....	37
3.4 Model Specification.....	38
3.5 Unit Root Tests: .....	39
3.6 Co-integration Test and Error Correction Modeling: .....	40
<b>CHAPTER FOUR</b> .....	42
<b>RESULTS AND DISCUSSION</b> .....	42
4.0 Introduction.....	42
4.1 Unit root test results.....	42
4.2 Cointegration tests .....	43
4.2.1 Model 1.....	44
4.3 Analysis of estimation results .....	45
4.3.1 Model 1.....	45
4.3.1.1 Long-run results.....	45
4.3.1.2 Short-run results.....	46
4.3.1.3 Model diagnostics and stability test.....	47
4.3.2 Model 2.....	49
4.3.2.1 VAR results for Model 2.....	49
<b>CHAPTER FIVE</b> .....	52
<b>SUMMARY, CONCLUSION AND RECOMMENDATIONS</b> .....	52
5.0 Introduction.....	52
5.1 Summary.....	52
5.3 Conclusion .....	53
5.4 Recommendations .....	54
<b>REFERENCE</b> .....	55

## LIST OF TABLES

Table	Page
Table 2.1 Summary of Related Literature Review of External Debt and Economic Growth Relationship .....	30
Table 4.1: PP Unit Root Results .....	43
Table 4.2: ARDL Bounds Test Results for Model 1 .....	45
Table 4.3: ARDL Bounds Test Results for Model 2 .....	45
Table 4.4: Long-run results for Model 1 .....	46
Table 4.5: Short-run results for Model 1 .....	48
Table 4.6: Model Diagnostics and Stability Test .....	49
Table 4.7: VAR Estimates for Model 2 .....	52



## CHAPTER ONE

### INTRODUCTION

#### 1.0 Background to the study

Ghana is a lower middle income country in West Africa with a total population of 24,658,823 million. Agriculture is the most dominant economic activity sector which absorbs most of the entire people in the country. Most of the people employed in this sector ranges between 15 - 60 years and above. Skilled agricultural, forestry, and fishery work remains the dominant occupation (Ghana Statistical Service, 2010 Population and Housing Census).

The Ghanaian economy has been experiencing rapid economic growth rate for some decades now. Thus, in 2011, the growth rate was 14.4%, i.e. one of the highest in the world at that time. The impetus for this growth can be characterized by the exploration of oil, fuelled by the increasing demand of a healthy global economy. The macroeconomic conditions of the Ghanaian economy further declined in 2014 with large twin-deficits lingering, fuelling the economy's debt and inflation, a fast reduction in the value of its currency, and a lower progress of economic growth. The macroeconomic problems continuously to be motivated by the large government wage bills and increasing cost of interest rates. The fiscal deficit substantially deteriorated to about 9.4 percent of Gross Domestic Product in 2014 from 10.4 percent in 2013 (Ghana Statistical Service)

The results of over a decade persistent expansion for Ghana is that, its economy is today 50% higher than it was in the mid – 1990s. In order for the country to continue to grow, Ghana is looking forward to provide more roads and transport networks, expansion of

electricity to other areas of the economy, an expansion of health and sanitation facilities and provision of telecommunication networks, and much more. Additionally, the economy is looking up to large scale investment to enhance its infrastructure facilities. Consequently, the government cannot fund all these investments from tax revenues which is seen as a major source of revenue and is also questionable to come from private funding. However, without all these abovementioned developments, the Ghanaian economy cannot sustain (Simpson, 2008).

It is usually expected that low income countries, that are facing limited in supply of capital, will borrow externally to support their domestic savings (Pattilo et al, 2002). The rate at which they acquire foreign debt is highly dependent on the interconnections between domestic and foreign savings, investments and economic growth. The fundamental principle of the standard “growth with debt” literature states that countries should continue to acquire a foreign debt, so far as the capital (loan) obtained yields a pay-off that is relatively larger than the cost of the foreign asset borrowed. When this happens, the borrowing country will intend to increase its capacity and as well expand output with the aid of the acquired foreign savings.

Some Sub - Saharan Africa countries have usually taken on a strategy that depends largely on external financing from both private and official sources for their economic development (Ajayi and Oke, 2012). It is unfortunate that, the stock of foreign debt has increased over recent decades for many sub-Saharan African countries to a point that is extensively seen as not sustainable.

In many countries, one major sources of financing capital formation is external debt. Debt is basically incurred by an act of excessive borrowing. External debt can be defined as the amount of money that is not generated by a country internally from either

corporate bodies or the households instead it is acquired from foreign countries for economic development. According to the World Bank (1998), external debt refers to the amount of money that is disbursed and outstanding contractual liabilities of residents to pay interest, with or without the principal within a given period of time.

Adepoju(2007) states that Africa countries that are less developed can widely be seen by insufficient external capital formation as a results of the vicious circle of poverty, low productivity, low income and low savings. According to him, this predicament needs managerial, financial, and technical assistance from foreign countries to close the difference in resources. Additionally, in most low income countries, external debt is also seen as the main problem to capital accumulation. The dynamics and burden of foreign debt has proven that they do not contribute meaningfully to financing economic development in most countries that are developing. Mostly, debt continues to build up as a result of the requirements on debt servicing and the principal payment itself. With reference to the afore-mentioned literature, external debt becomes an interminable means for work over-exploitation, poverty aggravation, and a constraint on development in developing countries.

Many African countries have suffered from external borrowings because loans that were contracted for investment purposes to enhance economic growth were not optimally utilized. For this reason, the investments returns were insufficient to meet maturing obligations and have served as hindrance to economic growth. Countries in African have underperformed just because more of the country's productive resources are used for debt servicing obligations and partly because most African countries have actually failed to put in place the necessary macro-economic variables to ascertain growth.

## 1.1 Statement of Problem

It is no overstatement towards the assertion that, Ghana's extremely large external debt burden was what made the country to be considered as one of the countries under the Heavily Indebted Poor Country (HIPC) in 2001. The country could not embark on large level of household investment that intended to have yielded economic growth because of the high level of debt servicing payment to lending countries. Ghana together with these 17 other poor countries i.e. Niger, Benin Republic, Senegal, Nicaragua, Mozambique, Guyana, Zambia, Rwanda, Mali, Burkina – Faso, Tanzania, Uganda, Mauritania, Bolivia, Madagascar, Honduras, and Ethiopia received debt cancellation of 100 percent totaling an amount of \$40 billion (Semenitari, 2005). Taken into consideration the recent debt relief given to Ghana, it would be expected that the country's economic trend and operations should improve.

Short term debt have been rising and falling since 1970's. This dynamics has continued resulting from the conditions that normally come with official loans. The act of acquiring foreign loans at stiffer rates and shorter maturity dates to finance unproductive economic projects is one of the main reasons attributed to the worsening debt situation of most low developing countries, including Ghana (Bentum, 2009).

The short term external debt which was \$241.0 million in 1986 decreased by \$150.9 million, constituting (62.6%) to \$90.1 million in 1987. The fall was attributed to the payment of short-term loans and overdrafts as well as reduction in arrears of current payments. During the year 1987, the Bank of Ghana paid \$91.2 million of its short-term loans and overdrafts and reduced its arrears on current payment from

\$122.2 million go \$59.8 million. The summary shows that a dramatic decline in the short term debt was witnessed in 1990 where it was estimated at \$53.83 million (Bentum, 2009).

The World Bank report published in 2012, indicate that the short-term foreign debt as a ratio of total external debt in Ghana was last recorded at \$26.88 million in 2010. From the point of view of Word Bank, Short-term debt comprise the entire debt having an original maturity of one year or less and interest in arrears on long-term debt.

Considering the number of years Ghana had been independent and the large debt it had taken combine with her available institutions, one can put forward that the entire spectrum of the Ghanaian economy today has not been adequately active, most especially when compared with some economies of the same lesser aged developing group. In view of this, policymakers and academicians are always debating on the consequences of external debt accumulation on investments and economic growth.

Actually, agreement on the objective of foreign debt on growth has not been established. It has been estimated to be both positive and negative, but to some extent different scholars and experts share the ideathat external debt will impact economicgrowthfavourably since foreign debt will accelerate inflows of capital. In a situation where inflows are spent on viable expenditures, then it will increasethe rate at which the economy grows. This development will not only generate foreign capital for industries likewise will it also provide technical and managerial expertise, technology and in addition creating markets in foreign countries for the mobilization of a nation’s material and human capital for economic growth. On the contrary, other scholars also profess that when external debt builds up beyond a certain level, it will lower the economic growth by cramplinginvestment. These and many contradiction results in

literature were the basic motivation for this study to investigate the effect of short-term foreign debt flows and debt servicing on economic growth in Ghana.

## **1.2 Objectives of the Study**

The general objective of the study is to investigate the effects of short-term foreign debt flows and debt servicing on economic growth in Ghana through the way of the following;

1. To investigate the effect of short-term foreign debt flows on economic growth in Ghana.
2. To determine the effect of short-term foreign debt servicing on economic growth in Ghana.

## **1.3 Statements of hypotheses**

### **1.3.1 Hypothesis I**

**H<sub>0</sub>:** That short-term foreign debt flows does not affect the economic growth in Ghana.

**H<sub>1</sub>:** That short-term foreign debt flows affects the economic growth in Ghana.

### **1.3.1 Hypothesis II**

**H<sub>0</sub>:** That short-term foreign debt servicing does not have impact on economic growth in Ghana.

**H<sub>1</sub>:** That short-term foreign debt servicing has impact on economic growth in Ghana.

## **1.4 Research Methodology**

With the purpose of addressing the afore-stated objectives, the study uses secondary data for the period 1990-2012. A generated secondary dataset from the World Bank i.e. (World Development Indicators) is used to conduct this research. This study's uses an

econometric technique of analysis to assess the effects of short term foreign debt flows and debt servicing on economic growth in Ghana.

### **1.5 Significance of the study**

The significance of the study is as follow;

1. This study provides an econometric approach upon which the effect of short term foreign debt flows on Ghana's economic growth and debt servicing could be examined.
2. Moreover policy makers will be more informed to make favourable policies so that the rate at which the country obtains short-term foreign debt flows and the servicing of the debt could be minimized to aid economic growth.
3. In academia, it will serve as a reference point for students who would be interested in the topic for their project works.

### **1.6 Delimitation of the study**

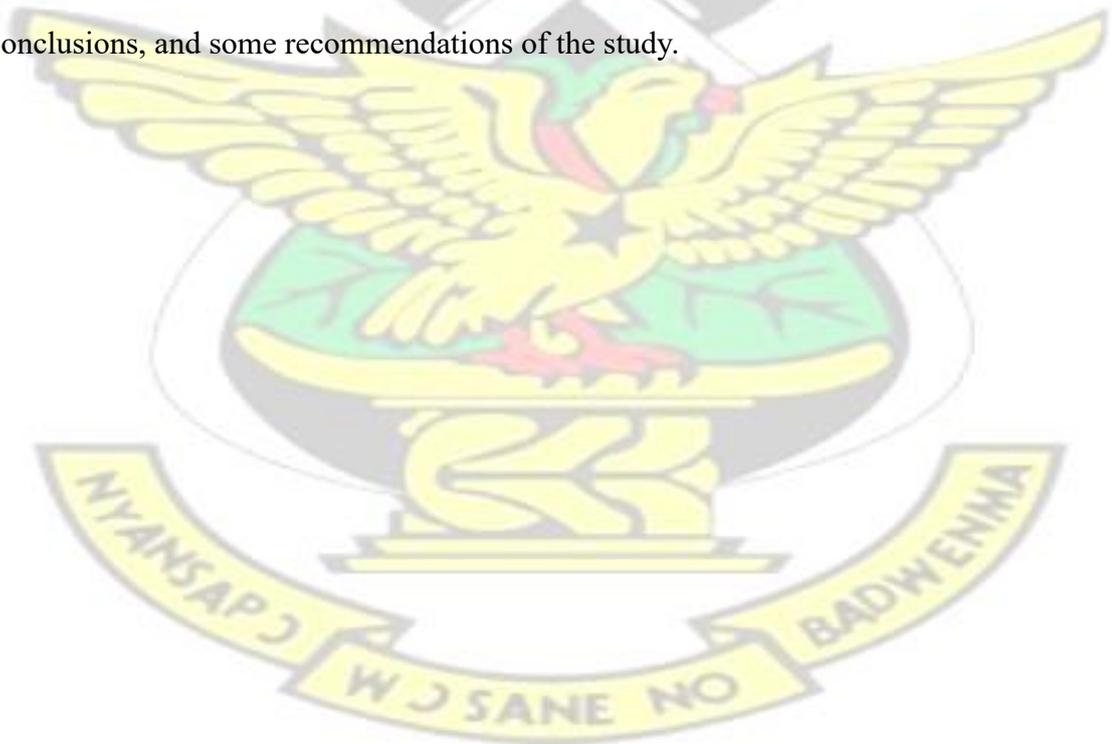
The study did not centralize on the effects of long term foreign debt flows on economic growth in Ghana. Nevertheless, it only concentrated on the effects of short term foreign debt flows and its debt servicing on economic growth in Ghana.

### **1.7 Scope of the study**

The primary focus of the study is a detailed analysis on the effects of short-term foreign debt flows on the economic growth of the Ghanaian economy as measured by the Gross Domestic Product (GDP). It is interesting to emphasize that, the experimental investigation of the effect of short-term foreign debt flows and its debt servicing on the economic growth in Ghana is only narrowed to the period 1990 to 2012. This limitation is necessary because of the interest to concentrate on the current developments in Ghana's short-term foreign debt flows profile and the availability of data for these time periods.

## 1.8 Organization of Chapters

The study is organized into five chapters. Chapter one is the introductory chapter which embodies the background to the study, statement of the problem, objectives of the study, statement of the hypotheses, research methodology, significance of the study, delimitation and scope of the study. Chapter two elaborates detailed on the review of related literature on the research topic. Chapter three contains the research methodology which is made up of the type of study, method of data collection, data analysis and estimation techniques, model specification, and criteria for evaluation. Chapter four consists of the analysis of the data collected and the interpretation of the results obtained and to test whether the results obtained are statistically significant and also addressed the afore-mentioned research objectives. Chapter five includes the summary, conclusions, and some recommendations of the study.



## CHAPTER TWO

### LITERATURE REVIEW

#### 2.0 Introduction

This chapter discusses literatures related to the research topic. The chapter is divided into sections; the theoretical literature review, definition of some terms and the empirical literature review.

#### 2.1 The Theoretical Review

The classical economic theory has laid more emphasis on ways that competitive markets and free trade can enhance economic growth. According to David Ricardo, economic growth particularly depends on how a country is able to accumulate capital which is in turn spurred or motivated by rate of return on the capital.

Alfred Marshall, a famous development economist, also emphasize on savings and free markets as a way of propelling a country to achieve a higher economic growth rate. More so, Schumpeter and Lewis theorized that human capital can also be seen as an impetus which determines economic growth. Consequently, the idea of resorting to external borrowing can be dated back to the great depression of the 1930's. According to the Maynard J. Keynes, who is notably seen as the leader of the Keynesian school, postulates that a country's economic growth can be stimulated through investments by the government. Based on this assertion, Keynes rejected the Say's law by saying, "Instead of using the normal channel of supplying goods and services when there is already the existence of demand for the goods or service, Keynes further stipulated that create demand through the supply of goods and services", all other things being equal. That is to say, by making investments in sectors such as home construction and

infrastructures, government can reduce the unemployment rate in the country by creating a number of jobs for the people. As it has been stated, developing economies faced the problem of inadequate of funds and technological knowhow to undertake large projects, therefore there will be then need to finance these projects through external debt.

Again, the Harrod-Damodar growth model stipulates that the rate of economic growth is dependent on the rate of savings which enables investments and capital output ratio.

The rational expectations theory states that every investor's expectation is similar to the best guess of the future (the optimal forecast) after considering all the information available. More so, other growth theories have laid more emphasis on increasing domestic savings so as to promote economic growth. From economic theories, one way of financing investment is through savings and that these investments will ensure economic growth in the country. It is as a result of this reason why countries from Asia have been enjoying relative higher growth in their economies as compared to African countries. In spite of that, it relies on how efficient the investment is. When savings becomes exorbitant at a certain point in time, it results to lowering economic growth since consumption falls as people cannot afford to consume.

### **2.1.1 Solow Growth Model**

This section will try to elaborate more on the fundamental studies of the Solow growth model, theories on external debt and the effect of external debt on Solow growth model.

The Solow growth model was developed and published in 1956. It was a conference paper on economic growth and development under the title "A contribution to the theory of economic Growth". Robert Solow was a noble prize winner in Economics in

1987 for his immense contribution towards the understanding and development of economic growth and growth theory respectively. The model tried to provide an answer to an undeniable fact or question on growth and development economics. That is, why some rich countries are so rich while other countries are so poor?

Assumptions underlying the Solow growth model:

- It is assumed that all countries produce and consume a single product (output)
- In the short run technology is assumed to be exogenous
- The production function exhibits constant returns to scale.

The model's production function depends on the Cobb - Douglas production function which is stated as

$$Y = F(K^d, L^d) = K^a L^{1-a}$$

Where

$Y$  denotes output produced

$K^d$  denotes Capital input  $L^d$  denotes Labour input  $a$  denotes output elasticity of capital " $a$ " lies between 0 and 1.

$1-a$  denotes output elasticity of labour

$y = Y/L$  denotes ratio of output per worker  $k$

$= K/L$  denotes ratio of capital per worker

By mathematical manipulation in the above equation, it becomes:

$$Y_t = k^a$$

According to this equation, when a country uses more capital intensity, it will generate more output per worker which is subject to the law of diminishing marginal returns to capital per worker. (Jones, 2002)

More so, capital accumulation equation is one of the vital equations in the Solow growth model which is mathematically stated in the form:

$$\dot{K}_t = sY_t - dK_t$$

Where

$\dot{K}_t$  denotes change in capital stock  $sY_t$  denotes gross investment

$dK$  denotes depreciation of capital during the production process

More so, from this mathematical framework Solow made some manipulation to derive the capital accumulation equation in the form of capital per worker terms as:  $\dot{k}_t = sy_t - (n+d)k_t$

From the equation stated above, a change in capital per worker is exogenously determined by investment per worker ( $sy_t$ ), depreciation per worker ( $dk_t$ ) and the rate of growth in population ( $n$ ). With all these variables, it is only investment per worker which has a direct relation to the change in capital stock per labour.

### 2.1.2 The Solow Diagram and the Production Function

From the Solow equation, the Solow diagram or graph can be plotted when we use the output per labour and capital per labour equations stated below.

$$y_t = k^a \dots\dots\dots 1$$

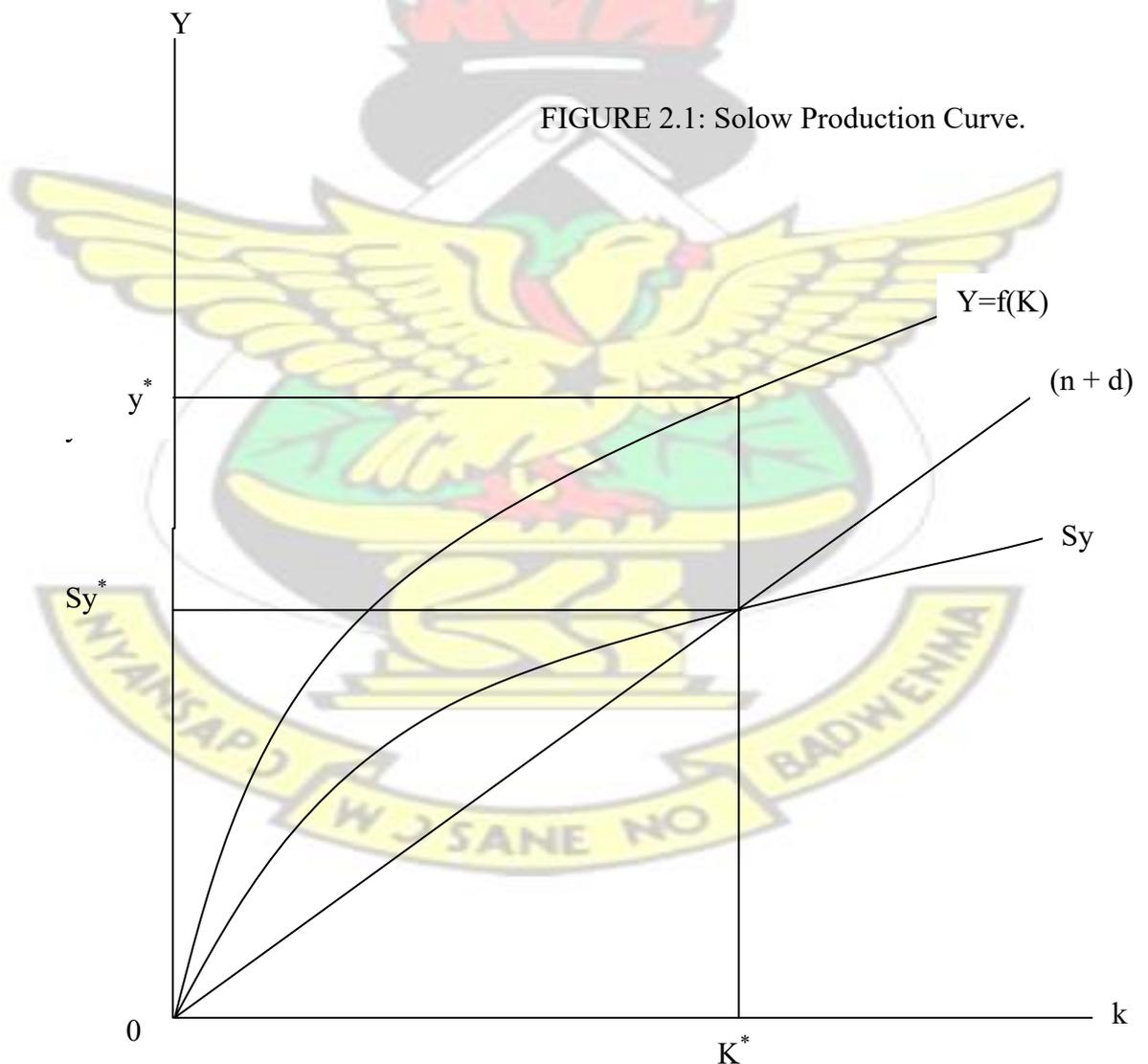
$$\dot{k}_t = sy_t - (n+d)k_t \dots\dots\dots 2$$

The Solow graph has three (3) curves, the first one,  $y = k^a$ , is basically the production function curve.

The second curve which is almost the same in terms as the shape of the production function curve is called the investment per labour curve,  $sy_t$ . Again, the last curve

$(n+d)k_t$  is made up the sum of depreciation perlabour, " $dk_t$ " and rate of growth in population " $nk_t$ ". Both the population growth rate and depreciation per worker will reduce the level of capital per worker in the economy if they are increase. The vast gap between the investment per worker curve and the last curve is known as the change in the capital stock per worker. Anytime the difference between these curves is positive, this will mean that the change in capital stock per worker will be positive which will in turn lead to economic growth. This situation is called capital deepening. Consequently, if the change in capital per labour is zero but the actual capital stock is increasing due to population growth, then one would say capital widening has occurred.

FIGURE 2.1: Solow Production Curve.



At the steady state condition of capital intensity and steady state of output per worker can be given as:

$$k_t^* = \left( \frac{s}{n+d} \right)^{1/1-a}$$

$$\left( \frac{s}{n+d} \right)^{a/1} = y_t^{*-a}$$

KNUST

Where:-  $k^*$  denotes steady state capital per worker  
 $y^*$  denotes steady state output per worker

In relation to the mathematical framework stated above, Solow concludes from his model, all other things being equal, “countries that are able to save more and have high investment rate will become richer; since they are able to accumulate large amount of capital per worker, and this will give them opportunity to produce more output per worker”. However, countries that experience a high rate of population growth will tend to become poor.

### 2.1.3 Investment rate changes and the Solow growth model

Based on the Solow equation, when there is an increase in the investment rate in an economy that has reached its equilibrium or steady- state condition, the investment curve moves (thus the  $s y_t$  curve) upward to  $s' y$ . When this happens, that particular economy will arrive at a new or higher steady state capital stock per labour value which will eventually translate to economic growth.

#### 2.1.4 Population Growth rate and Solow growth model

Again, assuming an economy's rate of growth in population increases after the economy has already attained its steady state condition, the  $(n+d)k_t$  curve will eventually move upward, thus to a new level, say,  $(n'+d)k_t$ . This situation will lead to a fall in the steady state capital stock per labour value.

#### 2.1.5 Technology and the Solow growth model

In assessing the entire outcome of a change in technology, Robert M. Solow added a new variable known as labour-augmenting which he labelled it  $A_t$ . After the inclusion of the new variable, the Solow equation now become

$$Y_t = F(K_t, A_t L_t) = K_t (A_t L_t)^{1-\alpha}$$

According to Solow (1956), a country can experience a sustained and enhanced economic growth per capital income when the technological progress of that country is high. He further asserts that, technological progress can only occur when the variable „ $A_t$ “ increases with time. Labour becomes more productive when he is abreast with technology in the economy and this can accelerate economic growth.

#### 2.2 Definition of Terms

*Debt management* is referred to as an economic policy which tries to change the structure, composition, stock and the terms and condition of debt with an idea to maintain it at any given time. Sustainability level in debt service payment has actually turned to be an issue of concern in macroeconomic management to most countries around the globe, especially developing countries. This comprises the planned acquisition, deployment and retirement of external loans drawn either for economic development agendas or for balance of payments accommodation (Ojo 1997). As reported by UNCTAD, it includes functions that have connection with

regulation, analysis policy, recording, control and operation activities.

*Debt burden* is the reflection of the strenuous and pressure resulting from debt servicing. This normally arises as a country is not able to produce sufficient resources to meet its debt obligations. The index used to measure the burden level is the ratio of current income (resources) that is used to finance the amount of past consumption. This will mean that when more resources are used to service a debt; fewer resources will be made available in promoting economic growth. That is, when countries unreasonably use large portion or fraction of current income in external debt servicing, the debt burden increases. In the opposite direction, countries can service their external debts without compromising the necessities of internal economic development.

*Debt sustainability* requires that indebtedness be kept in line with the capacity of the borrower to repay (IMF 2003). This means that a country should efficiently and effectively utilize the borrowed funds so as to yield a higher rate of return that will be sufficient to pay the debt-service cost. This simple definition, however, becomes a complex situation for most developing countries to comply while it becomes opposite to firms or projects.

*Economic growth* may be defined as increasing total output which can occur with no increased efficiency or rising levels of living. Growth can result from increased population; increased capital investments; longer working hours; or a larger proportion of the population working, as when women, young people, and old people enter the labour force instead of remaining at home, at school, or retirement. If the total hours worked in a society double but total output goes up by 50 percent, there is growth even though efficiency has declined. Growth may even be associated with falling levels of

living if population grows faster than output, or if capital investments grow faster than increase in output (Oser and Blanchfield, 1975; pp. 449).

*Economic development* may be defined as rising output per hour of labour with no reduction in employment. Economic development therefore implies improvement or increasing efficiency. Economic development also refers to economic growth plus sustained changes in the quality of people's life. These changes are accompanied by physical changes in economic structures and output distribution. Such changes may also include an improvement in the material well-being of the low income group in the country, development of human capital, increasing the literacy ratio, improvement in the infrastructure, creating employment opportunities and an appreciable technical advances originating within the country.

The essence of modern economic growth is that, on average, the per capita income of all people in a nation rises, not just the income of a select few. And as per capita income rises, other fundamental changes occur that affect the way people live. As income increase and people move to the urban centers, behaviour within the household in a way changes. Modern economic growth, therefore, involves some basic structural changes in the way both production and society is organized (See Hagan Everett, *Economics of development*, 3<sup>rd</sup> edition, pp. 18).

*Economic stability* can be defined as a situation where a country goes through constant economic growth and low inflation over a period of time. An economy that experiences a stable economic environment may enjoy certain advantages such as increase in productivity, improved efficiencies, and low rate of unemployment. Common signs of an economic instability are extended time in economic recessions, persistent increase in prices of goods and services, and exchange rates volatility.

However, an economic environment that is not stable may cause consumer confidence level to decline, stagnated economic growth, and also leads to a decline in international investments.

Statistics have proven that, countries that are not able to generate sufficient domestic saving to spur their aspirations for economic growth has historically sought finance from other countries. The United States relied heavily on foreign saving, particularly during the antebellum period from 1835 to 1860. Likewise, Russia needed foreign saving to propel its development in the three decades before World War I and the communist revolution. Foreign saving can help development but it is not essential for it (See Hagan Everett, Economics of development, 3<sup>rd</sup> edition).

Hunt (2007) postulates that a rise in savings and investment in an economy will translate to economic growth. Sachs (2002), debated by saying a country will not experience economic growth unless capital stock rises to a certain threshold. According to him, as capital stock increases, investment and output rise, in a virtuous circle, savings level will also increase appreciably. After a certain limit has been attained, the increase in both savings and capital stock will be enough to bring about independent economic growth and development. The main rationale for advancing to external finance, as a way of attaining sustained development instead of making use of domestic resources only, is given by a theory called dual gap. This theory assumes that investment depends on savings, and that in least developed countries, the amount of domestic savings is insufficient to fund the required investment to ensure a country's development. Then, it becomes prudent for a country to resort to the use of foreign products and services.

It is not always the case that external debt certainly transforms into debt burden. This does not occur when the borrowed funds are properly put into good use. Optimal utilization condition will mean that the marginal return on invested funds should be relatively higher than or the same as the cost of borrowed capital, rate of savings and the returns on investments. From the point of view of Edelman (1983), the overriding factors that influence debt service capacity is the cost of borrowing, rate of savings and the returns on investment. Ubok-Udom (1978) enlisted some of the costs of external borrowing to comprise debt service burden which embodies expenditure obscured by the expression structure of external loans, costs of the viciously cumulative debt, costs of import substitution, outlay of resultant liquidity predicament, cost of obligation rescheduling, and manageability of the debt etc.

Although a majority of developing countries consider foreign savings to be an important ingredient in their development efforts, controversy surrounds foreign aid, foreign investment, and the debt that has accrued from foreign borrowing. During the Post-World War II period, the International Bank for Reconstruction and Development (IBRD), popularly known as the World Bank highlighted development lending to least developing countries, whereas the International Monetary Fund (IMF) loaned resources to assist developed countries and less developing countries to help them their balance of payments crises (See Hagan Everett, *Economics of development*, 3<sup>rd</sup> edition).

The International Monetary Fund (IMF) was actually set up in order to give technical advice to member countries on how to create economic and monetary policies to improve economic condition and stability. It also gives information and statistics about the current state of economies around the world. The IMF measures data such as

gross domestic product growth, inflation, unemployment, payment balances, export, import, external debt, capital inflows and outflows, and commodity prices as variables to stability. It is the most important source for data and statistics on the current state of most countries.

Governments, all over the world, make some loans on commercial terms, including export credits, equity investments, and “hard” loans from the World Bank and regional development banks. Concessional flows are technically called official development assistance (ODA), but are popularly called foreign aid. Aid can further be divided into; bilateral aid which is given directly by one government to another and the bilateral aid donors normally plan and disburse loans and grants through an aid agency such as the United States Agency for International Development (USAID); and multilateral aid in which the funds are transferred to an international agency such as the World Bank, United Nations, and the regional development banks, which in turn grant or loan the funds to recipient developing countries.

Most development assistance agencies deal with a wide range of aid instruments such as both capital and technical assistance. Most of these capital aids are allocated against specific projects such as hydroelectric projects, construction of roads, rural development projects, and they are termed as project aid. However, some bilateral agencies, including USAID, have made program loans which finance general categories of imports and are conceived of as broad support for balance of payments. Structural adjustment loans, especially made by the World Bank, are to support economic reforms. Food aid is a kind of bilateral program loan since it provides commodities, mostly grains that would otherwise have to be purchased with a country’s own foreign exchange earnings. Aid can be in the form of technical assistance which is

the provision of skilled individuals, mostly engineers and medical officers, to augment national expertise (See Hagan Everett, Economics of development, 3<sup>rd</sup> edition).

External debt (or foreign debt) can be classified as that component of the overall debt stock in an economy which is payable to beneficiaries outside the country. The defaulters can be individuals, government, or business entities. Such debt may comprise of some amount of money owed to other governments, private commercial banks, or foreign monetary organizations like the World Bank and IMF.

The sum of a country's overall external debt may also include the amount of debt overdue to non-resident governments, businesses, and institutions and repayable in foreign currency or other goods and services. The total external debt of a country is the summation of both short term and long term debt instruments. According to Mishkin, a short-term debt is defined as a debt instrument which its maturity is less than a year whereas a long-term debt is a debt instrument which its maturity is ten years or more.

Debt servicing on the other hand, is the interest and principal payments of an acquired loan over a period of time. A debt service ratio is therefore the principal and interest payments of a borrowed fund due in a given period of time, usually on long-term debt divided by that year's exports of goods and services. Sometimes, as in sub-Saharan Africa, lower debt service ratios reflect substantial default or debt rescheduling. Another measure of the burden of debt is debt service that is expressed as a percentage of Gross National Product (GNP).

With reference to the debt overhang theory, countries that have larger external debt to Gross Domestic Product ratio is likely to get relatively low funds to create a sound

business environment to promote investment, this situation will further worsen the prevailing economic growth level in the country. “The liquidity constraint hypothesis” also in a way make similar analysis but it emphasizes on crowding out impact. The hypothesis says when external debt servicing increases it create low opportunities for less developed countries to pay their debt on time, for this reason it may influence the country’s ability to borrow more funds from external sources. When this happens, it exerts more pressure on governments to resort to domestic borrowing which eventually advances to crowding out effect. Hence, lowering the current debt service must pilot an increase in current investment for any given level of subsequent or future indebtedness (Cohen, 1993).

From economic studies, crowding out occur as results government huge or excessive borrowings, that is to say a kind of expansionary fiscal policy, which reduces private sector investment spending. In a situation where government expenditure increases or tax revenues decrease results in budget deficit that will be financed by increase in government borrowings. Then, this borrowing can affect interest rates or raise interest rate, leading to a reduction in private investment spending. Normally, when economists make use of the term “crowding out”, they may be making reference to expenditure of the government that affects some financial and other resources that would have in turned been used by the private organizations.

Some economic theories have stated that, the condition of being in debt has some positive effect on indebted countries up to a certain threshold point. When a country, attains that threshold level, then exorbitant indebtedness begins to effect prevailing economies negatively. For this reason, private investments are not included and

financial outflows can be sustained. The relation between growth and indebtedness still remains optimization problems of debt.

Theoretically, debt affect economic growth via the following medium namely liquidity constraint, fiscal effect, debt overhang, productivity suppression and a fall in human capital accumulation (Savvides, 1992).

### **2.3 Empirical Review**

Traditional theories on foreign debt crisis have somewhat generally centralized on the evolution of size and directions of the foreign debt in low income countries. Other studies have also investigated the burden of debt indicators as well as the cruelty of the debt crisis (Ahmed, 2008). After the debt crisis that many low income countries in the early 1980s experienced, most scholarly research on foreign debt and its effect on economic growth began to receive attention. Consequently, various researchers and academicians alike have researched on the effect of external debt on economic growth. A number of these empirical studies came out with the findings that external debt can either have an indirect impact on economic growth, whereas others researchers did not see any meaningful connection between external debt and economic growth. Real GDP and GDP growth were used as explained or outcome variables by the majority of the studies. Some of these studies also sought to find the positive impact of external debt servicing on growth rate in GDP. Notwithstanding, a small number of studies paid an attention to finding the impact of external debt on GDP per capita, capital formation and long term consumption pattern. Since, the end results of the various research studies were somehow integrated; therefore in such cases it becomes difficult to claim that external debt has negative, positive, or any meaningful impact on economic growth.

The relationship between external debt and economic growth is actually not a biased

relationship. Most economists have theorized and assumed that too much debt can affect a country's economic development in several ways. First and foremost, huge debt service obligations and requirements can dry up the country's capital and foreign exchange, since these assets are transferred to the payment of the debt's principal and interest. Countries do not wholly benefit from an increase in output or exports, as some percentage of the increment is used to pay the debt that accrues to creditors (Savvides, 1992). Additionally, when the debtor countries are not able to meet their debt service obligations within or at the agreed period, these countries will be seen as not creditworthy, so donor countries will be reluctant to lend resources to these economies. For this reason, debtor countries will have to pay high rate of interest to contract new loans or credit. Furthermore, debt accumulation reduces the efficiency of debtor countries, since it becomes challenging to adjust efficiently to some shocks and foreign financial fluctuations. Again, in order for debtor countries to acquire more foreign currency or capital to meet their debt obligations, they then reduce imports and open their borders for free trade without any restriction and as a result of this it affects their trade performance or gives rise to poor trade performance (Geiger, 1990).

Siddiqui & Malik (2001) empirically proved that there is a direct relationship and statistical significance between external debt and economic growth. The findings as well revealed that when debt servicing increases it affects investment levels; meanwhile other debt figures show that contribution of rate of investment to economic growth is unaffected.

According to Krugman (1988), large debts adversely affect economic growth, and this picture may perhaps be associated to debt-overhang theory. If there is the possibility

that in future, a country's debt will be higher than the country's ability repay, then the expected debt-service cost will serve as disincentive for further foreign and domestic investment (Pattillo et al. 2002). Nevertheless, when a country borrows abroad at a reasonable level, external debt could impact investment and economic growth positively. Laffer Curve is a theory which has widely been employed by economist to show the exact connection between investments and the face value of debt. As assumed by the theory, when the quantity of debt owned increases above a certain level of threshold, the amount of money that the country is expected to repay begins to decrease as a consequence of adverse effect. In addition, the uncertain condition of the outstanding stock of external debt may possibly lead to a low level of economic growth. Pattillo et al. (2004) makes the assertion that the major medium by which debt affect growth of countries is through efficiency and the nature of quality investment rather than its level, for the reason that the elimination of the rate of investment from the growth regression does not extensively alter the unfavorable effect of debt.

Chowdhury (1994) used a system of simultaneous equations to investigate the direct, indirect, and full effects of external debt on GNP and vice versa. Panel data was used to carry out the research for the period 1970-1988 on some chosen Asian countries, that is South Korea, Indonesia, Malaysia, Bangladesh, Philippines, Thailand, and Sri Lanka. The relationship wasn't so straightforward; hence, a structural simultaneous equation model was used to study the inter-relationships involving private and public external debt, production, and accumulation of capital. The findings of this structural model showed that the impact of private external debt and public debt on the level of Gross National Product in the above stated countries was very insignificant. The research findings did not in any way have relation with the debt overhang argument. It is

argued that, most indebted economies are experiencing slow pace in economic growth because of the debt overhang argument. Large debt burdens do not make countries to invest in their productive capacity affecting investment necessary to boost economy growth. Again, findings revealed that both public and private external debt has an insignificant impact on GNP. Additionally, he also came out with the findings that a rise in GNP levels eventually results to a larger rate of external debt, but it is not just the total external debt does have an indirect impact on economic growth. Chowdhury (1994) continued to emphasize that the economic slowdown in most developing countries cannot solely be attributed to their external debt.

According to Ayadi (1999), since developing countries are faced with external debt burden, their participation in the world's economic activities has become limited in that their attendant to debt servicing obligations has become a major problem to their economic growth and development. The heavy debt burden of these countries has led to failure to accumulate capital since they are usually depleting their international reserves to pay their debts

Were (2001) uses time series analysis from 1970- 1995 on Kenya's economy and tried to find out whether there is debt overhang problem and how this impact economic growth. He confirmed that the research actually did not reveal any unfavorable impact of debt servicing on growth and that there is crowding out effect on investments.

Schlarek (2004) employed data from some 59 developing countries over the period 1970-2002; he revealed that there was no any evidence of external debt actually affecting the total factor productivity in those countries. Consequently, his findings revealed that when developing countries are taking into consideration, higher rate of economic growth come with relatively lower external debt.

Mohamed (2005) used a time series data from the period 1978-2000, to study the impact of external debt on economic growth in Sudan. Real exports earnings growth rate were used to ascertain the impact of export promotion strategy whereas he used inflation to also capture the impact on macroeconomic policy. The conclusion was that external debt and inflation slowdown economic growth. But, on the other hand, the research in addition suggested that real export have significant impact on economic growth and affects growth positively.

Presbitero (2005) conducted a research on 152 developing countries data from the period 1977- 2005. He wanted to uncover the exact linkage between external debt and the growth rate in GDP per capita. He used lagged term of revenue and other macroeconomic variables as controlled variables in the study he carried out. He revealed that the economic growth of these countries was affected by crowding out effect as a result of the debt servicing that these countries were made to meet their debt obligations. The study categorically revealed that, a 10 percent rise in debt ratio caused economic growth of these to decrease by 0.1%.

Villanueva et al. (2006) in their research conducted, they tried to delve into the dynamics of economic growth, capital accumulation and external debt for Philippines over a period of 2000-2003. They carried out the research using the standard neo – classical growth model. In effect, they estimated the steady state ratio of external debt of GDP by using the goal seek approach. Furthermore, they also tried to determine the steady state savings rate per unit of effective labour in the long run. The conclusion was that, when the change in interest rate spread in terms of change in debt-to-GDP is high, the poorer the social wellbeing in the short run.

Adepoju et al. (2007) conducted a research for Nigeria using time series dataset over a period 1962 – 2006, to explore era to era behaviour of benefactor organization as an outcome of several multilateral and bilateral arrangements. Their conclusion was that, excessive piling up of external debt deterred in Nigeria's economic growth.

Seetanah (2007) used the vector error correction model technique to investigate to investigate the link between external debt and economic performance in Mauritius within this specific time frame 1960 – 2004. The results from the investigation showed that in the case of both short and long run periods, external debt is indirectly linked with the economy's output level. The findings also showed the presence of both crowding out effect and debt overhang effect as the two affects investment and hence economic growth.

Adegbite et al. (2008) in a study conducted in Nigeria, revealed that external debt and its debt servicing is inversely related to economic growth. The paper used the neo – classical model of economic growth in their estimations. They also employed two models in evaluating their results. In Model 1, economic growth is used as dependent variable with 6 variables as independent variables. In Model 2, two new variables are added to the first 6 independent variables in Model 1. These two variables were terms of trade and public capital expenditure.

Safia (2008) examined the linkage between external debt and economic growth using a data for 24 countries for analytical purposes defined within the period of 1976 – 2003 and the findings obtained from both the external debt index and macroeconomic indicators were in line with the debt-overhang proposition. Safia (2008) proved the debt overhang hypothesis that external debt does impede economic growth.

Oke Michael, O and Sulaiman L. A. (2012) conducted a research on external debt, economic growth, and investment on the Nigerian economy. The research findings showed that, both debt overhang problem and crowding out effect were frequent in Nigeria. The rationale for the country's external borrowing was to enhance growth, the current external debt as a ratio of GDP of Nigeria seemed to move in line with this. More so, the exchange rate showed a positive relation with Gross Domestic Product (GDP), this confirmed the erratic changes of the Nigeria exchange rate still increase GDP. The private sector is notably seen as the engine of economic development showed a negative relationship.

Oke et al. (2012) also conducted a study on the effect of external debt on economic growth and development in Nigeria. Their results affirmed that external debt burden had unfavourable effect on the national income and per capita income in Nigeria. According to him, high level of external debt can lead to increase in retrenchment of workers, bad educational system, constant industrial strike actions and depreciation of a country's currency.

A study conducted by Ahemet et al. (2012) on the impact of external debt on economic growth on transition economies within the period 1991 – 2009. The study tried to analyse the linkage between growth rate in GDP per capita and external debt to GNI within that period, the research findings was that, in the long run the relationship between external debt and economic growth was directly related to those countries that the data was collected.

Benedict Clements et al (2003) their findings revealed that external borrowing impacts a country's investment and economic growth positively up to a threshold point. However, the findings also revealed that external debt servicing can possibly retard the

economic growth of a country since most of these funds are used to the debt rather than putting it into investments. Additionally, the debt service can also lead to crowding out effect because it increases real interest rate, worsen the terms of trade of the borrowed country, leads to a fall in the returns of investments and also creates high tax rates. All these effects create a downward pressure on investments and growth. Degefe (1992) also confirmed that the relationship between of external debt and growth is negative.

**Table 2.1 Summary of Related Literature Review of External Debt and Economic Growth Relationship**

Date	Author	Time Periods	Sample	Research Findings
2009	Bentum	1970 – 2005	Ghana	External affects economic growth positively
2009	W. A. Adesola		Nigeria	Debt service has negative effect on economic growth
2008	Ayadi&Ayadi	1970 – 2007	Nigeria & South Africa	Negative link between debt and growth
2008	Abu Baker	1970 – 2005	Malaysia	External debt affects growth positively
2007	Seetanah& al	1960 – 2004	Mauritius	Negative link between external debt and growth
2007	Adepoju	1962 – 2006	Nigeria	External debt directly affects growth
2005	Mohamed	1978 – 2001	Sudan	External debt indirectly affects growth
2001	Were	1970 – 1995	Kenya	Did not find any adverse of debt service on economic growth
1994	Chowdhury	1970 – 1988	Some selected Asian countries such as , South Korea, Sri Lanka, Malaysia etc	Economic slowdown cannot solely be attributed to external debt

In summary, the main goal of the various literature analyzed here is to delve into the empirical evidence surrounding the changing relationship that exist between external debt and economic growth.

A good number of studies done in this specific area used a broader of set time series data defined over a longer period than others. In all, most of the research study concluded that, a higher level of external borrowing or debt leads to a fall in economic growth. However, some studies also revealed the relationship between external debt and growth is positive whereas other studies did not find any specific evidence.

### **2.3.1 Empirical evidence from Ghana**

In Ghana, only few research studies have been conducted to show the relationship between external debt and economic growth. These researchers employed various econometric techniques to investigate the relationship between external debt and economic growth and their research findings are as follow:

Frimpong, J.M and Oteng-Abayie, E. (2006) investigated the impact of external debt on economic growth in Ghana. They also tried to figure out the presence of a debt overhang or crowding out effects or the existence of both effects for the period 1970 – 1999. They employed KPSS, ADF and PP tests for unit roots. They also adopted the Johansen-Juselius multivariate approach to test for co-integration in order to check the long-run relationship and stationarity among variables. Again, they used Vector Correction Model (VECM) to analyze the short run impacts. Their findings revealed that external borrowing or inflows positively influences economic growth. However, it was also revealed that debt servicing on external inflows is also negatively related to GDP growth.

Bentum (2009) researched on the effect of external debt on economic growth of Ghana employing the Johansen multivariate co integration method, and vector error correction model using an annual data covering the period 1970 to 2005. The study revealed that

the long run effect of external debt on GDP growth rate is positive, which implies that Ghana does not suffer from the debt overhang problem.

Fosu (1996) contended that debt can also have an impact economic growth through the effect on the productivity of investment. Even when it happens that the repayment of the debt and its service do not lead to a fall in investments and savings considerably, they could still reduce output growth directly by lowering efficiency because of the unfavourable dynamics in investment mix.

## **2.4 Debt Profile and Sustainability Analysis in Ghana**

Ghana's debt level and structure have developed over the years. The development of both external debt and debt service within some time period is analyzed in this section.

### **2.4.1 External debt**

The external debt of Ghana has increased significantly after the implementation of the economic recovery and structural adjustment programmes in the 1983-86<sup>s</sup>. During the early 1980<sup>s</sup>, Ghana faced huge debt problems with external debt payment reaching as high as \$577 million, representing about 114% of total Gross Domestic Product(GDP) at the later part of 1982. The country experienced this debt problem was as a result of price of oil going up on the world market, economic recessions in West Africa, and sharp increase in international interest rate against the backdrop of poor economic management and policies in Ghana at that time. Ghana's public and publicly guaranteed debt reached \$6 billion in nominal terms at the end of 2000, including arrears of \$81 million. In terms of net present value Ghana's external debt

reached \$3.9 billion, representing about 571 percent of fiscal revenue, 157 percent of exported merchandise and non-factor services and 78% of Gross Domestic Product.

In terms of future debt repayments, the nature of Ghana's foreign debt is extremely critical. In year 2000, out of the \$6,062 million foreign debt, the long-term component of the foreign debt stock is about 87.8%, short-term debt is about 4.7% and medium-term debt accounted about 75 percent (Frimpong J.M & Oteng-Abayie, 2006).

In year 2000, Ghana's external debt reduced from \$6,062 million to \$2,177 million in year 2006. This reduction was by virtue of Ghana benefitting from the HIPC relief together with the Multilateral Debt Relief Initiative that begun from the year 2004 and year 2006 respectively. Later on, Ghana's debt considerably increased to \$8,836 million. The proportion of multilateral debt reduced from 66% to 48% with respect to the relative share in external debt, whereas the commercial debt share increased from 6% to 19%. Within the whole period, the component of multilateral debt fell short to the commercial and bilateral components. The commercial component portion recorded the largest increase.

Furthermore, in year 2012, the overall government debt increased from GH¢4,920 million to GH¢35,146 million, representing about six – times increase. This rise in the public debt was partially influenced by the effect exchange rate on the foreign debt. In terms of GDP ratio the overall public debt reduced from 113% to 26% in 2000 and 2006 respective years, basically reducing the pathway of the foreign debt as it was determined by MDRI and HIPC reliefs (Institute of Economic Affairs Monograph No. 34).

After these events, Ghana's debt ratio increased considerably to 48% in 2012 with respect to increase in both domestic debt and external debt. In year 2012, country-specific public debt sustainability threshold was set by both the IMF and World Bank for 155 countries around the world, including Ghana under the new debt

sustainability framework (DSF) in terms of the ratio of debt to GDP. In general, Ghana's threshold was placed at 75%, whereas a more rigorous threshold is recorded at 60%. Taking into account these benchmarks, the ratio of Ghana's debt to GDP was about 48.4% in 2012, which is contained by both thresholds, indicating a reasonable risk of debt suffering (IEA, Monograph No.34).

Ghana can maintain debt sustainability in the subsequent years ahead taking into consideration certain factors. The main factor to talk about is the rate of economic growth, which cannot be controlled so easily. Some other vital factors that need to be considered are the levels of fiscal deficits, financing the economy from external borrowings, and the terms of borrowing. Fiscal deficit is seen as the most important factor among the factors which have already been stated above. This is because it influences the level of borrowing and even the terms of borrowing. In order to keep the deficit under control, it is therefore prudent for long-term debt sustainability.

Undoubtedly, debt unsustainability and fiscal unsustainability are somewhat identical – they are simultaneously correlated. More so, it is imperative that borrowed funds are used effectively and efficiently, particularly for productive purposes so that sufficient growth can be enhanced in order to decrease the burden of debt servicing and foster sustainability.

## **2.5 External debt service**

Economists have always tried to ascertain ways by which a country can attain longrunning sustainable economic growth. Debt servicing can simply be defined as the payment of debt in the form of the principal and the interest that accrues on the debt given a period. Many economists and researchers in external debt specific have asserted that debt service payment is somewhat an impediment or a hindrance to economic

growth to many countries. They employed different econometrics techniques and methodologies. There are a number of reason why most developing countries or in general terms countries take loans (debt) externally. It could be that these countries are faced with budget deficit, low income or have low investments in their economies on conditions to pay back amidst some obligations.

Debt servicing has created some economic crisis and still continues to problems for most developing countries. This is because debt has to be paid much more than the amount (principal) that was taken. To some extent, when a country makes large debt service payment, it brings some restrictions and constraint on such countries economic growth. Again, it can also deplete a country's scarce resource and limit financial resources needed to promote economic growth.

W.A Adesola (2009) empirically investigated the effect of external debt service payments on the economic growth in Nigeria. His analysis was based on ordinary least square (OLS) multiple regression method. The findings revealed that debt servicing have negative impact on Gross National Product (GNP) and Gross Fixed Capital Formation (GFCF).

Abid, Hammad and M.Ali (2003) investigated the dynamic effect of Gross Domestic Product (GDP), capital stock, debt service and labor force on economic growth in Pakistan. The findings showed that debt servicing has a negative impact on productivity of the labour and capital and that it economic growth is affected negatively.

To sum up, many researchers have researched on this area using time series dataset. The conclusion that was made by most of these researchers proved that external debt servicing have a negative impact economic growth in several ways such as by affecting

GDP growth rate, per-capita income level, trade openness, foreign reserves and capital inflows, by rising crowding effect and debt overhang problem.

Ghana's external debt service payment indicates that debt service payment in totality was 182 million dollars in 2007 and rose to 346 million dollars in 2011. Debt service payment in terms of export in 2007 increased from 3.1% to 5.6% in 2008 which was the highest level compared with subsequent years to 2011. This has ever fallen to 2.4% in 2011. Ghana's mean ratio for the period from 2007-2011 was recorded at 3.9%. At the same time, the ratio of debt service payment to the revenue of government rose from 4.9% to 8.9% in 2007 and 2008 respectively before declining to 4.6% in 2011. Again, 6.7 percent was also recorded as Ghana's average ratio between for the period 2007- 2011. (IEA Report, Monograph No.34).

## **CHAPTER THREE**

### **METHODOLOGY**

#### **3.0 Introduction**

Research methodology can simply be seen as the process of gathering information and interpreting data for the purpose of making a meaningful analysis from the collected data. This chapter consists of the type of study; method of data collection; data analysis and estimation techniques; model specification; and criteria for evaluation.

#### **3.1 Type of Study**

The whole of economic theory can be seen as a collection of relationships among variables. Economics normally centres on the testing of hypothetical theories embodied in these relations and on the estimation of the variables involved.

In view of this, the type of study for this research was based on causal design. It was used because it gives greater confidence that the study has internal validity due to the systematic subject selections; and a replication is possible.

### **3.2 Method of data collection**

The data of this research was time series and taken from the year 1990-2012, so there were total 22 years data which was obtained to conduct the study. A generated secondary data from the World Bank i.e. (World Development Indicators) is used to conduct this research. This research study employs an econometric technique of analysis in determining the effects of short term foreign debt flows and debt servicing on economic growth in Ghana.

### **3.3 Data Analysis and Estimation Technique**

Regression analysis is concerned with the study of the dependence of one variable called the explained or dependent variable on one or more other variables called the independent variables, with the view of estimating the average value of the dependent variable in terms of the known values of the independent variable. Therefore, this research study employs an econometric method of analysis in determining the effects of short term foreign debt flows and debt servicing on economic growth in Ghana.

The data collected was evaluated, cross checked, compared, and also critically analyzed. The essence of this analysis was to transform the raw data into a more meaningful and acceptable form. From the processed data, the ordinary least square (OLS) estimation technique was used to test the hypotheses. The OLS estimation technique was use because, according to the Gauss-Markov Least Squares Theorem, the Least Square estimates are BLU (best, linear, unbiased) provided that the random term (U) satisfies some general assumptions, rarely that the random term (U) has zero

mean and constant variance. Besides, the OLS method has been used in a wide range of economic relationships with fairly satisfactory results and despite the improvement of computational equipment and of statistical information which facilitated the use of other more elaborate econometric techniques. More often than not, the OLS is still one of the most frequently used method in estimating relationships in econometric models. The mechanics of the least square are simple to understand (Koutsoyiannis, 1977).

### 3.4 Model Specification

#### Model 1

In a simple mathematical form, the functional relationship between the variables under consideration can be expressed as:

$$GDP_t = f(STEDF_t, GFCF_t, LFPR_t) \dots \dots \dots (3.1)$$

The model employed in the study is as follows:

$$\ln GDP_t = \beta_0 + \beta_1 STEDF_t + \beta_2 \ln GFCF_t + \beta_3 \ln LFPR_t + \epsilon_t \dots \dots \dots (3.2)$$

where  $GDP_t$ ,  $STEDF_t$ ,  $GFCF_t$ , and  $LFPR_t$  represent GDP, short-term external debt flows, Gross Fixed Capital Formation, and Labour Force Participation Rate respectively.  $\beta_i$  ( $i = 1, 2, 3$ ) refers to the coefficients of the regressors, while  $\beta_0$  is the coefficient of the constant. It denotes natural log and  $t$  captures the time-variant nature of the variables in the model. The error term is given as  $\epsilon_t$ .

**Model 2**

The model below was also employed to know the effects of short-term foreign debt servicing on economic growth in Ghana. Thus, in a simple mathematical form, the functional relationship between the variables under consideration can be expressed as:

$$GDP_t = f(STEDF_t, STEDS_t, GFCF_t, LFPR_t) \dots \dots \dots (3.3)$$

The model employed in the study is as follows;

$$\ln GDP_t = \beta_0 + \beta_1 STEDF_t + \beta_2 \ln STEDS_t + \beta_3 \ln GFCF_t + \beta_4 \ln LFPR_t + \epsilon_t \dots \dots (3.4)$$

Here, the coefficient of the short-term foreign debt servicing variable is  $\beta_2$  and the error term is given as  $\epsilon_t$ . All other notations are as described earlier.

**3.5 Unit Root Tests:**

The study adopts the Phillips-Perron (PP) unit root procedure to examine the stationarity of the series in Models 1 and 2. This is an important pre-requisite for investigating cointegration as well as estimating long-and short-run relationships. In order to prevent a false regression, none of the series in Models 1 and 2 should be  $I(2)$  or more. The PP procedure for examining unit root is particularly useful as it corrects for any possibility of serial correlation and heteroscedasticity in the residuals. It improves the coefficient of the t-statistic of the coefficient of the lagged dependent variable. The test is therefore considered more robust as against the traditional Dickey-Fuller (DF) and the Augmented Dickey-Fuller (ADF) test statistic. Stating lag length is not necessary when using the PP procedure. It is also appropriate for small sample size estimates such as 23 observations in this case. The PP equation is specified as:

$$\Delta y_{t-1} = \alpha_0 + \alpha_1 y_{t-1} + \epsilon_t \dots \dots \dots (3.5)$$

The equation follows an AR(1) specification. The test involves testing the null hypothesis of unit root and hence non-stationarity against an alternative hypothesis of no unit root, implying stationarity. There is unit root hence non-stationarity when we fail to reject the null hypothesis while stationarity exists implying no unit root when we reject the null hypothesis in favour of the alternative hypothesis. Mathematically, the null and alternative hypotheses are expressed as  $H_0: \rho = 1$  and  $H_1: \rho < 1$  respectively. The test is done both with an intercept and trend and with an intercept but no trend.

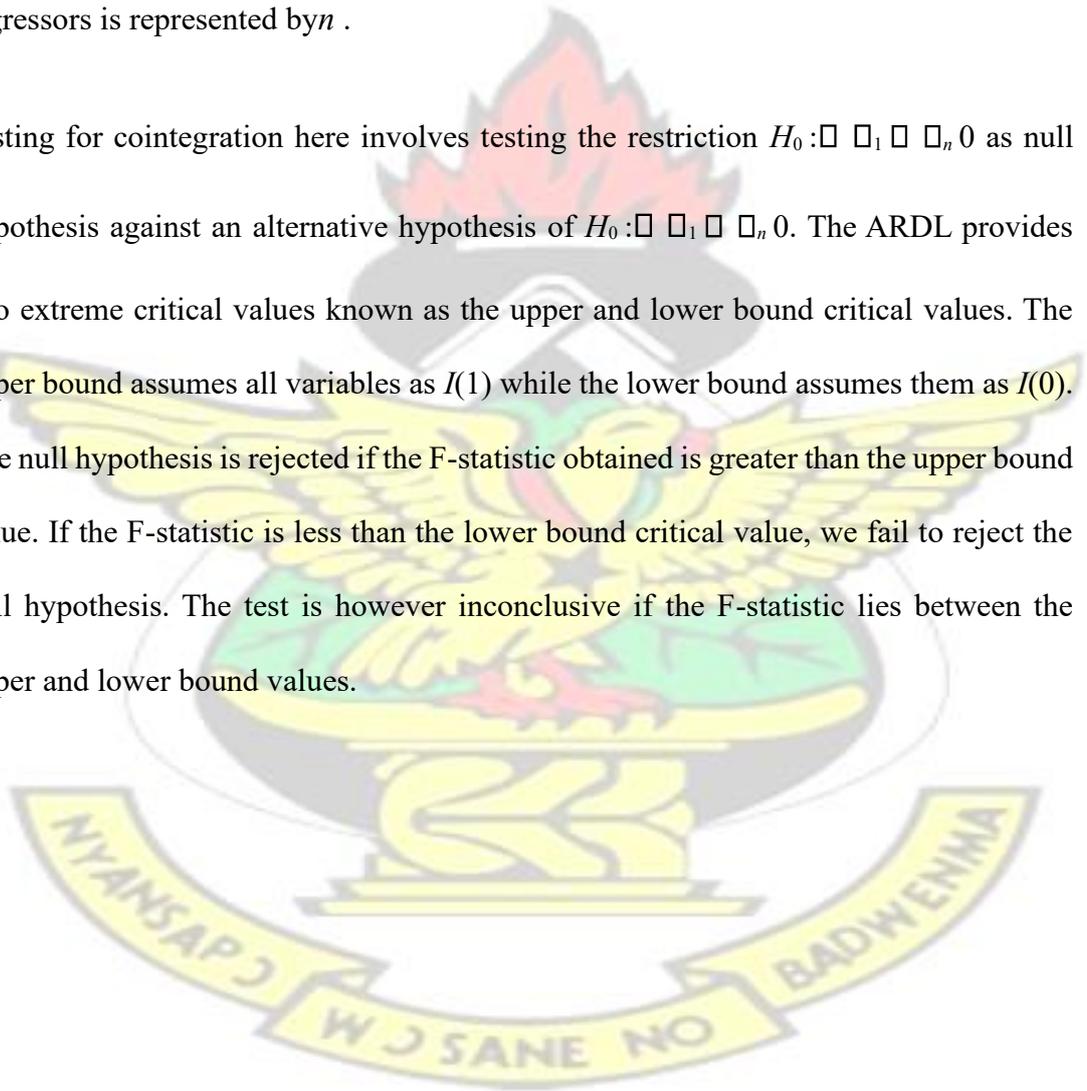
### **3.6 Co-integration Test and Error Correction Modeling:**

After determining unit root, it will be appropriate to examine cointegration given that none of the series is  $I(2)$  or even more. The study proposes the Autoregressive Distributed Lag (ARDL) technique to examine cointegration among the variables in Models 1 and 2. The ARDL test is particularly appropriate as it is able to accommodate variables that are strictly  $I(0)$  or  $I(1)$ , or a mixture (Pesaran et al., 2001). It is also appropriate for small sample size studies such as this. In this case, examining unit root may not be necessary. The test involves testing the null hypothesis of cointegration against the alternative hypothesis of no cointegration. Determining cointegration implies investigating the presence of or otherwise of levels relationship among the variables. The fact that the ARDL adopts the Error Correction Model (ECM) is also an added advantage. This is because the model is able to determine the extent to which previous periods disequilibrium are corrected in current periods. Where there is cointegration, errors do not continually become larger in the long-run since adjustments restrict such possibilities. The ARDL model which adopts the conditional unrestricted ECM is stated as follows:

$$\Delta Y_t = \alpha_0 + \sum_{i=1}^k \alpha_i \Delta Y_{t-i} + \sum_{i=0}^k \beta_i X_{t-i} + \epsilon_t \quad \dots\dots\dots(3.6)$$

The regressand is given as  $Y_t$  while  $X_t$  is the vector of regressors with their respective lags represented as  $Y_{t-i}$  and  $X_{t-i}$  and their respective coefficients as  $\alpha_i$  and  $\beta_i$ . The first difference operator is given as  $\Delta$ . The error term is given as  $\epsilon_t$  while the number of regressors is represented by  $n$ .

Testing for cointegration here involves testing the restriction  $H_0: \alpha_1 = \alpha_n = 0$  as null hypothesis against an alternative hypothesis of  $H_1: \alpha_1 \neq \alpha_n \neq 0$ . The ARDL provides two extreme critical values known as the upper and lower bound critical values. The upper bound assumes all variables as  $I(1)$  while the lower bound assumes them as  $I(0)$ . The null hypothesis is rejected if the F-statistic obtained is greater than the upper bound value. If the F-statistic is less than the lower bound critical value, we fail to reject the null hypothesis. The test is however inconclusive if the F-statistic lies between the upper and lower bound values.



## CHAPTER FOUR

### RESULTS AND DISCUSSION

#### 4.0 Introduction

The chapter discusses the estimation results obtained for the equations stated in the preceding chapter. Specifically, an analysis of the unit root test results obtained is done first followed by that of the cointegration results. Finally, an analysis of the estimated long-and short-run results for each model (where applicable) is in addition to an analysis of the various diagnostic and stability tests results obtained for each model.

#### 4.1 Unit root test results

The results of the examination of the stationarity properties of the variables used in Models 1 and 2 are presented in Table 1. The study adopted the Phillips-Perron (PP) unit root test procedure. The test is done at both the levels and first difference with models with trend and intercept and intercept but no trend. The appropriate lag length is selected using the Akaike Information Criterion (AIC).

**Table 4.1: PP Unit Root Results**

Variable	Level		First Difference	
	Trend	No Trend	Trend	No Trend
<i>lnGDP</i>	-1.202413	0.514952	-3.783750**	-3.397601**
<i>STEDF</i>	-4.980484***	-3.997210***	—	—
<i>lnSTEDS</i>	-2.357558	-2.578046	-6.097044***	-6.137463***
<i>lnGFCF</i>	-3.339025	-2.610166	-10.04079***	-9.496881***
<i>lnLFPR</i>	-1.669897	-0.365128	-3.543079**	-3.570591**

Source: Author

Note: \*\*\* (\*\*) indicates the null hypothesis is rejected at 1 and 5 per cent levels of significance respectively

The results show that *STEDF* is stationary at the levels, hence,  $I(0)$  irrespective of whether the test is done with a trend or no trend. This is because the absolute values of the test statistic for *STEDF* is greater than the absolute values of the critical values at 1 per cent in both cases, implying rejection of the null hypothesis of unit root and hence, non-stationarity against the alternative hypothesis of no unit root, implying stationarity. All other variables are  $I(1)$  at either 1 ( $\ln STEDS$  and  $\ln GFCF$ ) or 5 ( $\ln GDP$  and  $\ln LFPR$ ) per cent level of significance, irrespective of whether the test is done with trend and intercept or intercept but no trend. Therefore, it can be concluded the series adopted for the study are mean reverting; implying shocks are temporal, remaining at most after first differencing. The mixed unit root results lend support to the use of the ARDL bounds test approach to examining cointegration.

#### 4.2 Cointegration tests

When a series or more possess individual integration and there exists integration (for a lower order) in their linear combination, there is cointegration. Cointegration therefore implies joint movement among variables, and this phenomenon is particularly important for economic variables. Cointegrated variables are deviation reverting; such variables return to their means in case of any deviation from each other. Finally, a nexus exists among current and future values of a series when they are cointegrated. The ARDL bounds test cointegration estimated for Models 1 and 2 are stated in Tables 4.2 and 4.3 respectively.

### 4.2.1 Model 1

The results indicate cointegration. In other words, there exists a significant long-run relationship among current and future values of the regressors used in the model. The reason is that the F-statistic for Model 1 (4.758773) is greater than the upper bound critical value of 4.35 at 5 per cent level of significance. The null hypothesis of no cointegration is therefore rejected in favour of the alternative hypothesis of the existence of cointegration.

**Table 4.2: ARDL Bounds Test Results for Model 1**

Test Statistic	Value	K
F-statistic	4.758773**	3

Source: Author

Note: \*\* indicates the null hypothesis is rejected at the 5 per cent level of significance. The critical values for the 95 per cent lower and upper bounds are 3.23 and 4.35 respectively.

### 4.2.2 Model 2

The bounds test results for Model 2 shows no cointegration. The F-statistic here (0.792456) is lower than the upper bound critical value of 4.35 at 5 per cent level of significance. Hence, we fail to reject the null hypothesis of no cointegration. This casts doubts on the existence of a long-run relationship between the variables in Model 2.

**Table 4.3: ARDL Bounds Test Results for Model 2**

Test Statistic	Value	K
F-statistic	0.792456	3

Source: Author

Note: \*\* indicates the null hypothesis is rejected at the 5 per cent level of significance. The critical values for the 95 per cent lower and upper bounds are 3.23 and 4.35 respectively.

## 4.3 Analysis of estimation results

### 4.3.1 Model 1

Given evidence of long-run relationship among variables in Model 1 as shown by the co-integration results, the study estimates long-and short-run results using the ARDL approach. The results are provided in Tables 4.4 and 4.5.

#### 4.3.1.1 Long-run results

The long-run results shows debt *STEDF* has a positive but infinitesimal effect on economic growth. This is because the coefficient is positive (0.000000) and statistically significant at 10 per cent level. The result obtained is not surprising. The implication is that, if external debts are used to finance growth-enhancing expenditure such as capital spending (e.g. infrastructure), it is likely to cause growth eventually. After all, debts are not necessarily bad as some levels of debts can be allowed in order to stimulate growth (see Adam and Bevan, 2005). Moreover, most external debts contracted by the government are long-term in nature (see ISSER, 2013) and are mostly for capital expenditure. The infinitesimal coefficient may be explained by the fact that long-term projects financed by foreign debts take longer to impact growth. In addition, their effect on growth seems to be spread over their years of existence, possibly implying “little drops” of impact over a long-period of time. The small sample size used for the study may also be responsible for the results.

**Table 4.4: Long-run results for Model 1**

Regressor	Coefficient	Standard Error	T-Ratio
<i>STEDF</i>	0.000000*	0.000000	1.982663
<i>lnGFCF</i>	0.713990	0.497484	1.435203
<i>lnLFPR</i>	-6.123762***	0.903533	-6.777570
<i>C</i>	0.000000	0.000000	1.982663

**Source:** Author

**Note:** LNGDP is the dependent variable. \*\*\*(\*) indicate statistical significance at 1 and 10 per cent levels respectively.

The coefficient of the labour force participation rate variable ( $\ln LFPR$ ) is negative and statistically significant at 1 per cent level. To a large extent, this may be considered counter intuitive as it is expected that labour enhances growth. However, the results can be explained under some circumstances. In the first place, the counter intuitive results call into question the quality of the labour force involved in production. In other words, the skills and training obtained by “fresh entrants” into the production may not be that which eventually cause growth. Secondly, the factors of production available for use by the labour force may be questionable. Such factors may either be obsolete, faulty, inadequate or underutilized. All these reduce labour productivity and efficiency, ultimately “hurting” growth. Notwithstanding, the results so obtained may be attributed to the sample size.

It must be noted that the coefficient of the Gross Fixed Capital Formation ( $\ln GFCF$ ) variable although positive, is statistically insignificant in the long-run.

#### **4.3.1.2 Short-run results**

The short-run results are not significantly different from those of the long-run. In the short-run, the coefficient of the debt variable is positive and statistically significant at 5 per cent level while that of the labour force participation rate is negative and statistically significant at 1 per cent level. However, here,  $\ln GFCF$  is negative but statistically insignificant. The negative coefficient of  $\ln GFCF$  may imply that wear and tear on public goods or government capital goods in the face of poor maintenance culture makes them growth-inhibiting in the short-run.

**Table 4.5: Short-run results for Model 1**

Regressor	Coefficient	Standard Error	T-Ratio
$\Delta STEDF$	0.000000 **	0.000000	2.514280
$\Delta \ln GFCF$	-0.075139	0.145209	-0.517450
$\Delta \ln LFPR$	-1.719275***	0.421929	-4.074795
$ecm(1)$	-0.280755***	0.075153	-3.735779
R-squared		0.980335	
R-Bar Squared		0.974552	
F-Statistic		169.4984***	

**Source:** Author

**Note:** LNGDP is the dependent variable. \*\*\*(\*) indicate statistical significance at 1 and 10 per cent levels respectively.

Significantly, the error correction term,  $ecm(-1)$  contains the expected sign and it is statistically significant too. The reason is that,  $ecm(-1)$  is negative (-0.280755) and statistically significant at 1 per cent level of significance. It implies convergence to long-run equilibrium every period after every short-run shock. Specifically, 28 per cent of short-run shocks will be corrected every year, implying it will take approximately 3 years, 6 months for all shocks to be corrected in the long-run. This shows a reasonably appropriate speed of convergence to long-run equilibrium after every short-run shock. The negative and statistically significant coefficient lends further support to the co-integration results obtained earlier.

#### **4.3.1.3 Model diagnostics and stability test**

Next, the results of the model diagnostics and stability tests conducted on Model 1 are discussed. The estimates are given in Table 4.6 below. From the results, the model passes all the tests. Specifically, there is no evidence of serial correlation since the null

hypothesis of serial correlation is rejected. In addition, heteroscedasticity is absent due to the fact that the null of heteroscedasticity is also rejected. All residuals are normally distributed and the model is rightly specified. This is because, the null hypothesis of non-normal distribution of residuals as well as incorrect functional form specification are both rejected. The model is also structurally stable as shown by the stability results. Serial correlation was examined using the Breusch-Godfrey serial correlation LM test, while heteroscedasticity was tested with the Breusch-PaganGodfrey test. Normality was examined by the Jarque-Berra method and functional form investigated using the Ramsey RESET test. The negative and statistically significant  $ecm(-1)$  points to model stability.

**Table 4.6: Model Diagnostics and Stability Test**

Test Statistic	Results
Serial Correlation	0.291047 (0.7516)
Functional Form	3.238 (0.723)
Normality	2.739570 (0.254162)
Heteroscedasticity	0.423346 (0.6777)

**Source:** Author

**Note:** Values in parenthesis are probability values

### 4.3.2 Model 2

Given the absence of a cointegration relationship among variables in Model 2, it becomes inappropriate to estimate long-run results for Model 2. Hence, the study conducts Vector Autoregressive (VAR) estimation to determine short-run relationship between the variables in Model 2.

#### 4.3.2.1 VAR results for Model 2

From the results, the coefficient of the second period lag of the short-term external debt service variable is negative but statistically insignificant. The first and second period lag coefficient of the labour force participation rate variable is negative and positive respectively, but statistically insignificant.

The short-run results indicate that previous year and previous two years levels of growth increase current levels of economic growth in the short-run. The reason is that the coefficients of the first and second period lag of  $\ln GDP$  are both positive and statistically significant. Specifically, a unit increase in first and second period lag of  $\ln GDP$  causes current levels of GDP to increase by 0.070160 and 0.354178 per cent respectively. This implies some level of lingering permanency and continuity in growth over time. This is a particularly important fact as the opposite case of negative growth will mean lingering negative growth effects, at least in the short-run.

Previous years and two previous years' debt,  $STEDF$ , levels enhance current levels of growth. That is, a unit increase in previous year's debt levels will cause a 0.172E-10 per cent increase in economic growth while that of two previous years generate a 2.99E-11 increase in growth. Even though this may be considered infinitesimal, it is still statistically significant at 1 per cent level. Therefore, in the short-run if foreign debts are properly utilized, they are likely to cause economic growth.

The short-run coefficient of debt service,  $\ln STEDS$  variable provides intriguing results. It shows that one year lag increase in debt servicing causes economic growth in the current period in the short run. Specifically, servicing debts by a unit in the preceding year causes short-run economic growth of 0.192365, and the coefficient is statistically significant at 1 per cent level. This is however possible as previous year's debt service freezes funds for current year spending to promote growth. However, this effect is only likely when government spends such funds from "extra room" created as a result of previous year's debt servicing, on growth-enhancing ventures. It must be noted that, the negative coefficient (even though insignificant) for the second period lag of the same variable implies debts may be lingering and permanent which can "stunt" economic growth.

Finally, the short-run coefficient of  $\ln GFCF$  is positive and statistically significant at 1 per cent level. Therefore, one year lag capital formation is growth-enhancing in the short-run since such "capital" becomes available for production purposes in the shortrun. In addition, considering the fact that is in the short-run period, the "capital" is less likely to have suffered so much wear and tear to reduce its usefulness. Moreover, congestion on such capital may be less implying the need for maintenance may either be less if not unnecessary at all, freeing funds for other productive spending in the short-run in the current period. The coefficient of  $\ln GFCF$  is 0.139543.

**Table 4.7: VAR Estimates for Model 2**

Regressor	Coefficient	Standard Error	T-Ratio
$\Delta \ln GDP(1)$	0.070160***	0.34379	0.20408
$\Delta \ln GDP(-2)$	0.354178***	0.26972	1.31314

$\square STEDF(1)\square$	1.72E-10***	1.9E-10	0.89641
$\square STEDF(2)\square$	2.99E-11***	1.7E-10	0.17942
$\square \ln STEDS(1)\square$	0.192365***	0.18293	1.05155
$\square \ln STEDS(2)\square$	-0.023405	0.17965	-0.13028
$\square \ln GFCE(1)\square$	0.139543***	0.21157	0.65955
$\square \ln LFPR(1)\square$	-4.040393	2.01660	-2.00357
$\square \ln LFPR(2)\square$	0.502809	2.19269	0.22931
<i>C</i>	21.60102	7.67815	2.81331
R-squared		0.983728	
R-Bar Squared		0.967457	
F-statistic		60.45691***	

**Source:** Author

**Note:** LNGDP is the dependent variable. \*\*\* (\*) indicate statistical significance at 1 and 10 per cent levels respectively.

Model 2 is also reliable giving the fact that the R-bar squared indicates approximately 96.75 per cent of variations in the dependent variable (here  $\ln GDP$ ) is explained by the independent variables. Moreover, the statistically significant F-statistic proves the overall fitness of the model.

## CHAPTER FIVE

### SUMMARY, CONCLUSION AND RECOMMENDATIONS

#### 5.0 Introduction

The chapter summarizes the discussion of the results obtained and analyzed in the previous chapter. It also provides conclusions and makes policy recommendations based on the conclusions reached.

#### 5.1 Summary

The study set out to investigate the effect of short-term foreign debt flows on economic growth in Ghana. It also determined the effect of short-term foreign debt servicing on economic growth in Ghana. Annual data was adopted for the period 1990-2012. Two models were stated to examine the two objectives; Model 1 investigated the debt-flows-economic-growth relationship while Model 2 investigated the debt-servicing-economic-growth relationship. The ARDL bounds test technique was adopted to investigate cointegration in both models. The ARDL results showed cointegration among variables in Model 1 but no such evidence was obtained for variables in Model 2.

From the long-run estimates of Model 1 using the ARDL method, short-term foreign debt flows and gross fixed capital formation increase economic growth, even though the coefficient of the latter variable is not statistically significant. Labour force participation rate however, reduces economic growth in the long-run. The short-run results for short-term foreign debt flows and labour force participation rate are however not significantly different from those of the long-run even though that of gross fixed capital formation is now negative but still remains statistically insignificant. For Model

1, the error correction term is also negative and statistically significant, lending support to the cointegration relationship obtained and referred to earlier. In addition, the  $ecm(-1)$  also points to structural stability. It is also worth stating that Model 1 passes all diagnostic tests.

In the absence of cointegration, short-run estimates were obtained for Model 2 using the VAR method. The results show first and second period lags of GDP and short-term debt flows increase economic growth. In addition, first period lags of gross fixed capital formation, short-term foreign debt servicing, as well as second period lag value of labour force participation rate are growth-enhancing, even though the coefficient of the latter is statistically insignificant. However, the first period lag of labour force participation rate and the second period lag of short-term foreign debt servicing are growth-inhibiting, with the coefficient of the latter being statistically insignificant. This model also proves to be reliable given its  $R^2$  and F-statistic.

### **5.3 Conclusion**

The study examines the effect of short-term foreign debt flows and short-term foreign debt servicing on economic growth in Ghana for the period 1990-2012. The ARDL bounds test approach to cointegration is used. It can be inferred that, short-term foreign debt flows are likely to be growth-enhancing when a greater percentage of it is spent on capital expenditure. Also, debt servicing can freeze funds for productive government spending which will cause growth, where the lag between when debts are contracted and when they are paid are not too much. If persistent and lingering debt servicing exists, it causes constant deficits, growing debts and debts problems, which negatively affect all other macroeconomic variables such as inflation, exchange rate, interest rates,

government spending, tax revenues, among others eventually “stunting” growth. In the face of all these, the positive effect of debt and debt servicing can only be experienced with adequate level of capital formation and labour force with appropriate skills, training, technology and other necessary factors of production.

#### **5.4 Recommendations**

Government, policy makers, think tanks and all other interest groups must monitor and control spending of borrowed funds in order to ensure a greater percentage of it is used to finance capital spending.

Government must ensure debt servicing does not deprive the nation of funds for other necessary spending. To do this, excessive borrowing must be avoided. In addition, more concessionary loans as well as other debts with flexible and moderate terms of settlement and interests must be settled. In addition, government must not pile up loans that are due in order not to risk paying huge interests which will take away needed funds for statutory and other relevant spending.

The central bank and the finance ministry must ensure the cedi is stabilized in order not to cause growing debt servicing as a result of currency depreciation causing servicing required on foreign debts to soar as this will hinder growth.

In addition, labour entering the labour market must be adequately trained by both education institutions and the firms they work in to ensure they become and remain productive.

Lastly, the provision of capital goods such as infrastructure must be accompanied by frequent maintenance to reduce wear and tear which may eventually require huge

expenditure to replace. Where necessary, expansions can also be done to reduce congestion which depreciates the use value of public goods and services.

## REFERENCE

- Adepoju, Adenike, Adebisola, Salau, AdekunleSheu, and Obayelu, Abiodun Elijah (2007). *The Effects of External Debt Management on Sustainable Economic Growth and Development: Lessons from Nigeria*, MPRA Paper No. 2147
- Adosla, W.A. (2009), “ *Debt Servicing and Economic Growth in Nigeria: An Empirical Investigation*” *Global Journal of social sciences*, Vol.8, No.2, 1-11.
- AhmetUzun, CagatayKarakoy, BurhanKabadayi, and O. SelcukEmsen (2012), *The Impacts of External Debt on Economic Growth in Transition Economies*, *Chinese Business Review*, ISSN 1537-1506 May 2012, Vol. 11, No.5, 491-499
- Ajayi, Lawrence Boboye, and Oke, Michael Ojo (2012). *Effect of External Debt on Economic Growth and Development of Nigeria; International Journal of Business and Social Science Vol.3 No. 12 (Special Issue – June 2012)*
- Ajayi, S. I., and Khan, M. S. (2000). *External Debt and Capital Flight in Sub-Saharan Africa*. International Monetary Fund.
- Amaeteng and Amoako A. (2002). *Unidirectional and Positive Causal Relationship between Foreign Debt Service and GDP Growth*
- Ayadi, F. S., (1999). *The Impact of External Debt Servicing Requirements on Nigeria's Economic Development. A Dissertation Submitted to the University of Lagos, In Partial Fulfilment of Master of Science Degree, Lagos, Nigeria*

- Bentum-Ennim Isaac (2009). *External Debt and Economic Growth in Ghana*. *Oguaa Journal of Social Sciences*, Vol. 4, No. 4, Nov., 2009, pp. 1 – 34
- BOG (2005). The HIPC Initiative and Ghana's External Debt; An empirical assessment and Policy Brief, Special Studies, Research Department, Bank of Ghana.
- Bulow, J and Rogoff, K (1990). *Cleaning up Third World debt without getting taken to the cleaners*, *Journal of Economic Perspectives*, 4, 1, pp. 31 – 42
- Butts, Hector C. (2009). *Short-term External Debt and Economic Growth – Granger Causality: Evidence from Latin America and the Caribbean*, *the Review of Black Political Economy* 36:93 – 111
- Choong, C.; Lam, S.; Yusop, Z. (2010). *Private capital flows to low-income countries: the role of domestic financial sector*, *Journal of Business Economics and Management* 11(4): 598 – 612. <http://dx.doi.org/10.3846/jbem.2010.29>
- Chowdhury, A. R. (2004). *External Debt, growth and the HIPC initiative: Is the country choice too narrow?* In T. Addison (Ed.), *Debt relief for poor countries* (chap. 8)
- Chowdhury, Khorshed. (1994). *A Structural Analysis of External Debt and Economic Growth: Some Evidence from Selected Countries in Asia and the Pacific*, *Applied Economics*, 26: 1121-1131
- Cohen, Daniel (1993). *Low Investment and Large LCD Debt in the 1980s*. *The American Economic Review*. Vol. 83 No. 3
- D. Avramovic and al, "Economic Growth and External debt", International Bank for Reconstruction and Development, 1964.

- Dickey, D.A and Fuller W.A (1979) Distribution of the Estimator for Autoregressive Time Series with a Unit Root, *Journal of the American Statistical Association*, 74;427-31.
- Dwight H. Perkins, Steven Radelet, Donald R. Snodgrass, Malcolm Gillis, Michael Roemer (1996). *Economics of Development. 3<sup>rd</sup> Edition*, W.W. Norton and Company, Inc. 500 fifth Avenue, New York, N.Y. 10110
- Fosu, A. K. (2007). “*The External Debt-Servicing Constraint and Public Expenditure Composition: Evidence from African Economies*”. UNUWIDER. Research paper No. 2007/36.
- Fosu, A.K., (1996). The Impact of External Debt on Economic Growth in Sub-Saharan Africa. *J. Econ. Dev.*, 21(1): 93-118.
- Frimpong, J.M. and Oteng-Abayie, E.F. (2006), “The Impact of External Debt on Economic Growth in Ghana: A Cointegration Analysis”, *Journal of Science and Technology*, Vol. 26, No. 3, pp. 122-131.
- Geiger, L.T. (1990). *Debt and Economic Development in Latin America*, *The Journal of Developing Areas*, 24, pp. 181 – 194.
- Ghana Statistical Service (2012). *Summary of final report, 2010 population and housing census*.
- Henrik Hansen, and Finn Tarp. Erdal Karagol, *External Debt and Economic Growth Relationship Using the Simultaneous Equations*
- Hunt S.D. (2007). *Economic Growth: Should Policy Focus on Investment or Dynamic Competition? European Business Review Vol. 19 No. 4 pp. 276 – 291*

Institute of Economic Affairs (IEA) Report on Economic Growth; Monograph No 34

Iyoha, M. A. (1996). *External Debt and Economic Growth in Sub-Saharan African Countries: An Econometric Study. Paper Presented at AERC workshop, Nairobi*

Iyoha, M. A. (1999). *External Debt and Economic Growth in Sub-Saharan African Countries: An Econometric Study, AERC Research Paper 90*

Jones.I.Charles (2002) *Introduction to Economic Growth, Edition 4,New York: W.W.Norton.*

Koutsoyiannis, A (1977). *Theory of Econometrics, 2<sup>nd</sup> Edition, (Macmillan)*

Krugman, P. 1988. *Financing vs. forgiving a debt overhang, Journal of Development Economics 29 (3): 253-268.*[http://dx.doi.org/10.1016/0304-3878\(88\)90044-2](http://dx.doi.org/10.1016/0304-3878(88)90044-2)

Levy, A and Chowdhury, K (1993).*An Integrative Analysis of External Debt, Capital Accumulation and Production in Latin America, Asia-Pacific and Sub-Saharan Africa, Journal of Economics and Finance, 17(3), pp. 105-119*

Mohammed, Mutasim Ahmed Abdelmawla (2005). *The Impact of External Debts on Economic Growth: An Empirical Assessment of the Sudan: 1978-2001, Eastern Africa Social Science Research Review, 21(2): 53-66*

Ogunmuyiwa, M. S. (2011). *Does External Debt Promote Economic Growth in Nigeria? Current Research Journal of Economic Theory, 3(1), 29-35*

Oke Michael. O &Sulaiman. L. A (2012). *External Debt, Economic Growth and Investment in Nigeria; European Journal of Business and Management*  
[www.iiste.org](http://www.iiste.org) ISSN 2222-1905 (Paper) ISSN 2222-2839 (Online) Vol. 4, No. 11,  
2012

- Osei, B. (2006) "Ghana: the burden of debt service payment under structural Adjustment" African Economic Research Consortium, Research Paper n° 33, Nairobi, 1995.
- Oser Jacob, Blanchfield C. William (1975). *The Evolution of Economic Thought*, Harcourt Brace Jovanovich, Inc. (1975), ISBN: 0-15-525002-7  
Harcourt Brace Jovanovich, Inc. (1975), ISBN: 0-15-525002-7 pp. 448 – 450
- Pattillo, C., H. Poirson, and L. Ricci, (2004). *What are the channels through which external debt affects growth? IMF Working Paper WP/04/15*
- Pattillo, C., H. Poirson, and L. Ricci, (2002), *External Debt and Growth*, IMF Working Paper 02/69
- Pleskovic and Joseph E. Stiglitz, *Proceedings of the 1999 Annual Bank Conference on Development Economics*, (Washington: World Bank).
- Presbitero, A. F. (2005). *The debt-growth nexus: A dynamic panel data estimation*. *Economic policy and Open Economy Macro*, Quaderno Di Ricerca, No. 243, Milan
- Presbitero, A. F. (2008). *The debt-growth nexus in poor countries: A reassessment* *Economics: The Open-Access, Open-Assessment E-Journal*, 2, 1-28.
- R. J. Barro, "Are government bonds net wealth?", *Journal of Political Economy*, Vol. 82, Issue 6, PP: 1095-1117, 1974.
- Sachs, J.D. (2002). *Resolving the Debt Crisis of Low Income Countries* *Brooking Papers on Economic Activity* 2002, pp. 1-28
- Safia, S. (2008). *Does External Debt Affect Economic Growth: Evidence from*

*Developing Countries International Research? Journal of Finance and Economics*, 1450-2887. Retrieved from [http://www.aysps.gsu.edu/ECON\\_MA\\_ShabbirS.pdf](http://www.aysps.gsu.edu/ECON_MA_ShabbirS.pdf)

- Savvides, A. (1992) *Investment Slowdown in Developing Countries during the 1980s: Debt overhang or Foreign Capital Inflows*, *Kyklos*, 45 (3), pp. 363-378
- Schclarek, Alfredo (2004). *Debt and Economic Growth in Developing and Industrial Countries*, Lund University, Department of Economics in its series Working Papers with number 2005:34
- Scott, Gerald (1994). *External Debt, Growth and Debt-Service Capacity in SubSaharan Africa: A Theoretical and Empirical Analysis*, *American Economist*, 38 (1): 47-52
- Seetanah, K. Padachi and R. Durbarry (2007). External debt and economic growth: A vector error correction approach, *International Journal of Business Research*.
- Semenitari, I. (2005). *The Road to debt Relief in Tell No. 29*, July 18, pp. 38
- Siddiqui, R. and Malik, A. (2001), "Debt and Economic Growth in South Asia", *The Pakistan Development Review*, Vol. 40(4), Part II, pp.677-688.
- Simpson Stuart (2008), *Debt and Development – A Case Study of Ghana: A WORLDwrite paper*, [www.worldwrite.org.uk](http://www.worldwrite.org.uk)
- Solow Robert M (1956). A Contribution to the Theory of Economic Growth. *The Quarterly Journal of Economics*, Vol. 70, No. 1, pp. 65-94
- Ubok-Udom, E.U. (1978). *Development through Debt: Rationalizing the costs of External Borrowing*. *The Nigerian Journal of Economic and Social Studies*, 20. 48-56

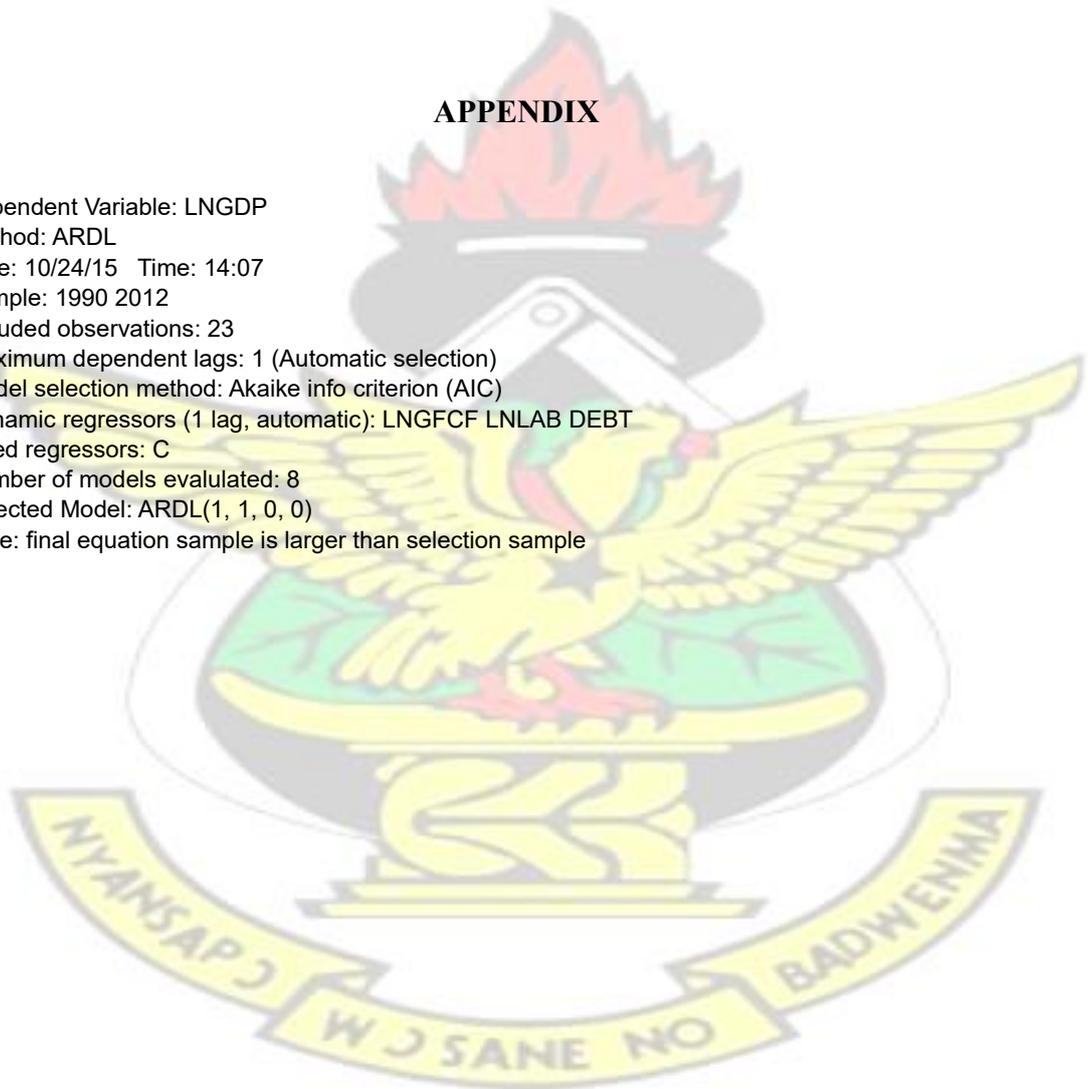
Villaneuva, D. 2003. *External Debt, Capital Accumulation and Growth*, SMU-SESS  
*Discussion Paper Series in Economic Studies.*

Were, Maureen (2001). *The Impact of External Debt on Economic Growth in Kenya:  
An Empirical Assessment.* UNU-WIDER Research Paper, DP2001/116

World Bank (1988). *Discussion Paper on Africa's Adjustment and External Debt  
Problems: Issues and Option.* In IMF/AACB symposium, Gaborone, Botswana.

## APPENDIX

Dependent Variable: LNGDP  
Method: ARDL  
Date: 10/24/15 Time: 14:07  
Sample: 1990 2012  
Included observations: 23  
Maximum dependent lags: 1 (Automatic selection)  
Model selection method: Akaike info criterion (AIC)  
Dynamic regressors (1 lag, automatic): LNGFCF LNLAB DEBT  
Fixed regressors: C  
Number of models evaluated: 8  
Selected Model: ARDL(1, 1, 0, 0)  
Note: final equation sample is larger than selection sample



Variable	Coefficient	Std. Error	t-Statistic	Prob.*
		0.075153		
LNGDP(-1)	0.719245		9.570426	0.0000
LNGFCF	-0.075139	0.145209	-0.517450	0.6115
LNGFCF(-1)	0.275595	0.136141	2.024328	0.0589
LNLAB	-1.719275	0.421929	-4.074795	0.0008
DEBT	2.82E-10	1.12E-10	2.514280	0.0223
C	12.48352	3.207417	3.892079	0.0012

R-squared	0.980335	Mean dependent var	23.07931
Adjusted R-squared	0.974552	S.D. dependent var	0.728771
S.E. of regression	0.116258	Akaike info criterion	-1.246556
Sum squared resid	0.229770	Schwarz criterion	-0.950340
Log likelihood	20.33540	Hannan-Quinn criter.	-1.172059
F-statistic	169.4984	Durbin-Watson stat	2.130350
Prob(F-statistic)	0.000000		

\*Note: p-values and any subsequent tests do not account for model selection.

#### ARDL Bounds Test

Date: 10/24/15 Time: 14:09

Sample: 1990 2012

Included observations: 22

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	k
	4.758773	
F-statistic		3

#### Critical Value Bounds

Significance	10 Bound		11 Bound	
10%	2.72		3.77	
5%	3.23		4.35	
2.5%	3.69		4.89	
1%	4.29		5.61	

#### ARDL Cointegrating And Long Run Form

Dependent Variable: LNGDP

Selected Model: ARDL(1, 1, 0, 0)

Date: 10/24/15 Time: 14:09

Sample: 1990 2012

Included observations: 23

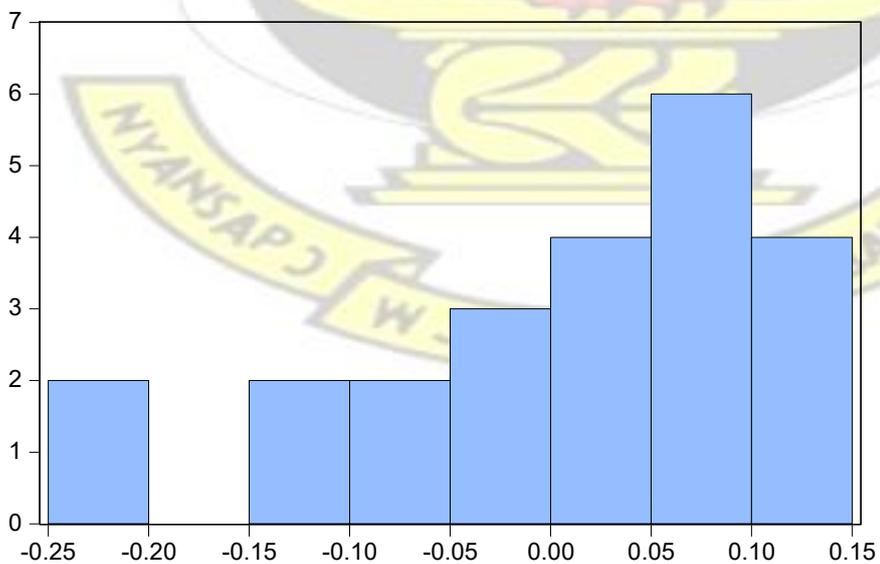
Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNGFCF)	-0.075139	0.145209	-0.517450	0.6115
D(LNLAB)	-1.719275	0.421929	-4.074795	0.0008
D(DEBT)	0.000000	0.000000	2.514280	0.0223
CointEq(-1)	-0.280755	0.075153	-3.735779	0.0016

$$\text{Cointeq} = \text{LNGDP} - (0.7140 \text{ LNGFCF} - 6.1238 \text{ LNLAB} + 0.0000 \text{ DEBT} + 44.4642)$$

#### Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNGFCF	0.713990	0.497484	1.435203	0.1694
LNLAB	-6.123762	0.903533	-6.777570	0.0000
DEBT	0.000000	0.000000	1.982663	0.0638
C	44.464160	4.062081	10.946153	0.0000



Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.291047	Prob. F(2,15)	0.7516
Obs*R-squared	0.859203	Prob. Chi-Square(2)	0.6508

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	1.063064	Prob. F(5,17)	0.4145
Obs*R-squared	5.478405	Prob. Chi-Square(5)	0.3603
Scaled explained SS	2.776040	Prob. Chi-Square(5)	0.7345

Ramsey RESET Test

Equation: UNTITLED

Specification: LNGDP LNGDP(-1) LNGFCF LNGFCF(-1) LNLAB DEBT C

Omitted Variables: Squares of fitted values

	Value	df	Probability
t-statistic	0.423346	16	0.6777
F-statistic	0.179222	(1, 16)	0.6777

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.002545	1	0.002545
Restricted SSR	0.229770	17	0.013516
Unrestricted SSR	0.227224	16	0.014202

**MODEL 2-VAR**

Vector Autoregression Estimates

Date: 10/24/15 Time: 16:45

Sample (adjusted): 1992 2012

Included observations: 21 after adjustments

Standard errors in ( ) & t-statistics in [ ]

	LNGDP	DEBT	LNDEBT_S	LNGFCF	LNLAB
LNGDP(-1)	0.070160 (0.34379)	-7.42E+08 (5.8E+08)	0.005246 (0.66883)	-0.759288 (0.45624)	0.066745 (0.02858)

		[ 0.20408]	[-1.28851]	[ 0.00784]	[-1.66423]	[ 2.33548]
LNGDP(-2)	0.354178 (0.26972) [ 1.31314]	5.34E+08 (4.5E+08) [ 1.18245]	-0.086564 (0.52473) [-0.16497]	0.860549 (0.35794) [ 2.40416]	-0.086474 (0.02242) [-3.85680]	
DEBT(-1)	1.72E-10 (1.9E-10) [ 0.89641]	-0.122119 (0.32090) [-0.38055]	2.01E-10 (3.7E-10) [ 0.53890]	3.21E-10 (2.5E-10) [ 1.26244]	-2.94E-12 (1.6E-11) [-0.18472]	
DEBT(-2)	2.99E-11 (1.7E-10) [ 0.17942]	-0.697186 (0.27924) [-2.49670]	6.92E-10 (3.2E-10) [ 2.13379]	3.64E-10 (2.2E-10) [ 1.64587]	-1.95E-11 (1.4E-11) [-1.40816]	
LNDEBT_S(-1)	0.192365 (0.18293) [ 1.05155]	1.42E+08 (3.1E+08) [ 0.46467]	0.137179 (0.35589) [ 0.38545]	0.331556 (0.24277) [ 1.36571]	0.000969 (0.01521) [ 0.06374]	
LNDEBT_S(-2)	-0.023405 (0.17965) [-0.13028]	16915027 (3.0E+08) [ 0.05620]	-0.018119 (0.34950) [-0.05184]	-0.100170 (0.23841) [-0.42015]	0.015960 (0.01493) [ 1.06870]	
LNGFCF(-1)	0.139543 (0.21157) [ 0.65955]	-1.73E+08 (3.5E+08) [-0.48946]	-0.024107 (0.41160) [-0.05857]	0.020429 (0.28078) [ 0.07276]	-0.029280 (0.01759) [-1.66481]	
LNGFCF(-2)	0.508852 (0.20383) [ 2.49643]	3.19E+08 (3.4E+08) [ 0.93312]	0.475750 (0.39655) [ 1.19973]	0.139054 (0.27050) [ 0.51405]	0.006007 (0.01694) [ 0.35454]	
LNLAB(-1)	-4.040393 (2.01660) [-2.00357]	-1.26E+09 (3.4E+09) [-0.37191]	4.566834 (3.92322) [ 1.16405]	-4.844681 (2.67622) [-1.81027]	2.113227 (0.16764) [ 12.6060]	
LNLAB(-2)	0.502809 (2.19269) [ 0.22931]	-2.03E+09 (3.7E+09) [-0.55266]	-4.181607 (4.26581) [-0.98026]	5.303090 (2.90992) [ 1.82242]	-1.258700 (0.18228) [-6.90549]	
C	21.60102 (7.67815) [ 2.81331]	1.41E+10 (1.3E+10) [ 1.09317]	16.30344 (14.9376) [ 1.09144]	-6.056284 (10.1897) [-0.59436]	0.748357 (0.63827) [ 1.17247]	
R-squared	0.983728	0.623373	0.579445	0.550052	0.996306	
Adj. R-squared	0.967457	0.246746	0.158890	0.100104	0.992611	
Sum sq. resids	0.180165	5.06E+17	0.681895	0.317305	0.001245	
S.E. equation	0.134226	2.25E+08	0.261131	0.178131	0.011158	
F-statistic	60.45691	1.655148	1.377810	1.222479	269.6833	

Log likelihood	20.16552	-425.8579	6.190016	14.22264	72.40025
Akaike AIC	-0.872907	41.60551	0.458094	-0.306918	-5.847643
Schwarz SC	-0.325776	42.15264	1.005225	0.240213	-5.300512
Mean dependent	23.12938	1.01E+08			
19.67604	3.115066	3.818752			
S.D. dependent	0.744057	2.59E+08	0.284729	0.187777	0.129808

---

Determinant resid covariance (dof adj.)	
51879227	
Determinant resid covariance	1270273.
Log likelihood	-296.5633
Akaike information criterion	33.48222
Schwarz criterion	36.21788

---

KNUST

ARDL Bounds Test

Date: 10/24/15 Time: 16:44

Sample: 1991 2012

Included observations: 22

Null Hypothesis: No long-run relationships exist

---

Test Statistic	Value	k
F-statistic	0.792456	3

---

