UNIVERSITY OF GHANA

THE IMPACT OF PUBLIC DEBT ON ECONOMIC GROWTH IN GHANA (1965 – 2017)

BY

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A LONG ESSAY SUBMITTED TO THE DEPARTMENT OF FINANCE, UNIVERSITY OF GHANA, IN PARTIAL FULFILMENT FOR THE AWARD OF A MASTER OF SCIENCE DEGREE IN DEVELOPMENT FINANCE

JUNE 2019

DECLARATION

I herewith say that this study is the result of my own research and has not been presented to this or any other university for an academic award. All references used in the work have been fully recognized.

I have exclusive liability for any weaknesses.

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SOLOMON BUERNORTEY ADI DATE

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CERTIFICATION

I hereby certify that this thesis was supervised in accordance with procedures laid down by the University.

…… .....……

DR. EDWARD ASIEDU DATE

(SUPERVISOR)

DEDICATION

I humbly dedicate this thesis to the Almighty God for His unending love and mercy. I also dedicate this thesis to my family and friends.

ACKNOWLEDGMENTS

I am grateful to God throughout my life for His protection and guidance. I am always happy with his unmerited favor and love; in times of trouble, he never abandons me, bringing the right people to support me and to provide things that I need.

Secondly, I am thankful to my supervisor, Dr. Edward Asiedu for his guidance that has helped enrich this research valuable. You were an inspirational coach to me. I am deeply grateful to Dr. Millicent Degraft-Johnson of the Ministry of Finance, Accra, for her critical and insightful comment and for also sharing with me materials which were very useful for this study.

In addition, I am grateful to my parents Mr. Ebenezer Adinortey Adi and Mrs. Kate Ayiku for their immense assistance towards my enrolment in the MSc programme at the University of Ghana Graduate Business School, and to my uncle Mr. Alfred Adi, and wife Mrs. Manuela Adi for providing one of my greatest needs for the enrolment of this programme. I will like to also show appreciation to Mr. Godwin Adi and Mr. William Buernor Adi. May the good Lord bless you all for supporting me financially and spiritually since my admission at the University of Ghana.

Similarly, my gratefulness goes to Victoria Amoakowah Appiah for her prayers and encouragement and to my colleagues namely; Nana Aba Anamoah, Richmond Darko Yeboah, Doreen Aculey, Esther Asare-Bediako, Josephine Appiawah Turkson, Asikah Raymond, and Amoako Daniel. I say thank you, guys, for contributing to the achievement of this greatness.

Lastly, I express my gratitude to Divine Allotey, the most cherished Teaching Assistant in the Department of Finance at the University of Ghana Graduate Business School, may the good Lord bless you dearly and to also my very good friend, Justin Tusoe of the University of Manchester, UK, thank you for always holding me down. I am grateful for the persistent love and encouragement, and to everyone whose name was not individually mentioned here. I say God richly bless you all for, I would not have achieved this success without your support and love.

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LIST OF ABBREVIATIONS

ADF – Augmented Dickey-Fuller

ARDL – Autoregression Distributed Lag model

ECM - Error Correction Model

GDP - Gross Domestic Product

HIPC - Highly Indebted Poor Country

IMF - International Monetary Fund

OECD - Organisation for Economic Co-operation and Development

OLS – Ordinary Least Square

RGLS - Swamy and Swamy-Mehta random generalized least squares

WAEMU – West African Economic and Monetary Zone

WB – World Bank

WDI – World Development Indicators

WEO – World Economic Outlook

ABSTRACTS

The aim of this study is to examine the trend of public debt, economic growth, and the relationship that exists between debt (both external and domestic) and growth in Ghana using time series data from 1965 to 2017. Based on this data, this study found that the economic growth rate in Ghana has been fluctuating, with a record gross domestic product (GDP) growth of -12.4% recorded in 1975 attributed partly to the political instability at the time (Coup d'état). The debt level for the year 1965 was 25.16% of GDP as against 16.47% of GDP in 1975. From 1986 on, the nation saw steady and good economic growth, but in 2000, the trend of government debt peaked (111.95% of GDP). The study also found that for about a decade in 2000, Ghana's economy suffered its worst growth performance when real GDP growth dropped to 3.7 percent. This poor performance in 2000 was attributed to the deterioration in trade with gold and cocoa, the key export earners of the country, falling as the price of crude oil— the main import commodity of the country — rose rapidly. Thus, from 1965 to 2000 there has been a downward and upward trend in the country's public debt and growth and a relatively stable trend have followed afterward.

The study used the Ordinary Least Square (OLS) Model to establish the relationship between public debt and economic growth, with robust standard errors. This study found a positive correlation between public debt and economic growth for the era under consideration. In this study, the various independent variables (population growth, expenditure, inflation, trade openness, and government investment) were also controlled. After controlling for these variables, the study shows that trade openness and government investment are positively linked to economic growth and inflation is negatively linked, with no relation between government expenditure and economic growth in Ghana. All in all, the robustness test indicated that public debt which is the variable of interest significantly influenced economic growth in Ghana in the year under review.

CHAPTER ONE

INTRODUCTION

1.1 Background

The debt crisis of the world in the mid-1970s and 1980s was a result of poor debt management policies between low and middle-income nations (Marquez, 2000). Oil production in these years were very high allowing countries to borrow externally without strict terms and conditions or unfavorable terms from donor countries and other international bodies. Debt acquisition in these periods were very high and the servicing of debt turn to be the main challenge for the emerging and less advanced states due to the increase in short term loans. Most of these countries acquire short term loans and invested in long term projects; thus, their inability to fulfill debt obligations on time (Marquez, 2000). Similarly, debtor countries were rolling over their huge debt due to the large balance-of-payment trigger in the 1973-74 oil crisis (Stambuli, 1998). This affected economic development, as developing countries tried to maintain the rate of growth and borrowed heavily to be able to afford oil imports and to finish the development projects initiated in the previous decade. The allocation for most of the projects by the government was mismatched with the financing maturity structure. That is, authorities take short term loans and invest heavily in long term projects. Thus, these countries are unable to retrieve these funds to settle their debt obligations (Krumm, 1985). It was an opportunity for most African governments who had never borrowed before to use the Euromarket platform to borrow a huge amount to finance their public expenditure (Krumm, 1985). However, advanced country investors ignored the imminent debt crisis, as they were extremely willing to settle long-term credits of developing nations with shorter maturities. For that matter, developing countries debt level increased suddenly from $130 billion in 1973 to about $612 billion for the year 1882 (IMF, 1984). The inability on the part of the

government of Mexico to settle its outstanding liability and other credits with the commercial banks in the U.S led to the debt crisis in developing countries in August 1982 (Wellons, 1987). Following this debt crisis, the issue of public debt is more topical now in most developed and developing countries which Ghana is not an exception, because of its negative impacts on economic development. This is attribute to government actions leading to reductions in private investment spending which reduces the initial incline of total investment. The effect is determined by domestic borrowing and the high levels of debt servicing using domestic revenue which is also declining. This was confirmed by the Ghana Debt Sustainability Report (2017) which showed that Ghana faces a high risk of debt distress, particularly, external debt (IMF, 2017). The report further explained that continual fiscal slippages such as breaching external debt threshold, ineffective debt and cash management are the factors influencing the debt issues experienced in the country.

According to the report, Ghana's external debt constituted 66% of the total public debt, representing 59% increase since 2011 of which its gross financing needs in 2017 was 20%, which is above the 15% gross financing needs for developing countries. Government sources for funds via external or internal to finance its budget when its domestic revenues from taxes are inadequate (Owusu-Nantwi & Erickson, 2016). According to Ogunmuyiwa (2010), the government is left with the choice of borrowing to finance its infrastructure project when tax revenue is inadequate and also political authorities do not want to conciliate macroeconomic stability by printing more money. Erickson and Owusu-Nantwi (2016), were of the view that Ghana's tax system is fragile and thus, the country is unable to create sufficient funds from taxes to finance its budget deficits; hence, taxes are not seen as the appropriate measure for the financing of government expenditure. Ghana's informal sector is not captured in the country's tax system due to the insufficient information on this sector making it difficult for tax authorities to have a fair understanding of their economic activities and levy them for that reason (Bagahwa & Naho, 1995). However,

Caribbean Development Bank (2013) is of the notion that developing countries with poor tax systems and low incomes, consider debt as the suitable choice to funding its government budget; hence government debt serves a vital role in developing countries. It allows government fiscal policies in maintaining the level of economic stability to promoting economic development function well. The use of resources or cash in a country that has not, or in any way belongs to its owner but rather is an obligation embodied by a financial instrument or by any other formal equivalent is seen as public debt (Oyejide et al., 1985). The government can borrow either from the foreign or the domestic markets in order to meet its expenditures. By so doing, it crowd-out the private sector and further leads to financial instability if much of the borrowing is in the domestic market (Panizza et al., 2010).

In the history of Ghana's economy, increasing and higher public debt has always been one of the leading economic challenges the country faces. The state has also recorded a higher level of inflation as well as a fast depreciating exchange rate as a result of this higher public debt. This has placed the country in the unfortunate state of high foreign debts which, over the years, has led to a higher dependency on support and other credits to back its economic development. The debt level for the year 1965 was 25.16% of GDP as against 16.47% of GDP in 1975. The country recorded the highest debt stock of 111.95% of GDP in 2000. The year 2000's abysmal performance was largely down to terms of trade deterioration as prices of gold and cocoa dipped against a rise in the amount of crude oil. With this came a drastic nosedive in foreign exchange earnings. A weak domestic economic performance resulting in an imbalance in financial gains and a sharp rise in monetary growth deepened obvious problems that led to substantial reductions in production and consumption (African Economic Outlook, 2002). Nevertheless, the proportion of Ghana’s debt stock started to decline after the aids the country had from the HIPC relief which for the year 2006, the average percentage of Ghana’s foreign debt to its overall debt stock had declined to 41% with

outstanding 59% coming from the locals (Amponsah, 2015). Ghana's debt level started rising from 26.22% recorded in 2006 to 57.21% in 2013. This rising state debt has become a domestic problem. Schools of thought connected to the debt burden raised a strong debate on the possible opposing consequences due to the increase of public borrowing on the economic growth of Ghana. The government has developed a comprehensive policy on public debt, which is driven by a continuous increase in debt levels and in an effort to steer investment and to guarantee that public debt remains at a sustainable level.

1.2 Problem Statement

Many researchers in some developing economies have examined the connection between debt and economic growth. Researches include debt and growth nexus of Cote d'Ivoire (Fofana, 2018); Government debt and gross national product of Ghana by Erickson and Owusu-Nantwi (2016); the impact of government debt (both external and domestic) on economic growth of Ghana (Anning et al., 2016); the consequences of debt on the growth of the economy for 19 developing economies covering 1990 – 2011 (Zouhaier & Fatma, 2014), and study on public liability results of Nigerians for economic growth (Egbetunde (2012).

Advanced countries also had a share in these studies: Dar Atul and Amirkhalkhali (2014), Dogan and Bilgli (2014), Baum et al. (2012), Greenidge et al. (2012), Presbitero and Panizza (2012), Balassone et al. (2011), Camen and Rogoff (2011), Cecchetti et al. (2011), Rother and Checherita (2010), Woo and Kumar (2010), and Reinhart and Rogoff (2010).

The instrumental variable approach used by Presbitero and Panizza (2012) is to study how debt influences OECD countries' economic growth. Their findings indicated negative connections between public debt and economic growth. In addition, Cecchetti, Mohanty and Zampolli (2011) investigated debt data from 1980 to 2010 for 18 OECD countries and concluded that the government debt has a declining impact on economic growth, with a debt burden that goes beyond

85% of the GDP, and does not allow extraordinary events to be resolved in future. They indicated a 90% GDP limit for corporate and household borrowing of approximately 85% GDP. Schclarek (2004), Shah and Shahida (2012) had no relationship between Bangladeshi debt and growth, and Checherita-Westphalia, Baum, and Rother (2012) informed of high and positive effects of government debt growth when relative debt increases are below 67 percent, which is not subsequently linked to the government debt and the growth of the twelve European countries. Erickson and Owusu-Nantwi (2016) used the vector error correction model and the Johansen cointegration data analysis techniques to evaluate the semi-permanent and causal-link between Ghana's government debt and economic growth for the forty-two-year (1970-2012) period and found a positive and statistically significant link between the government's debt and the growth of the Ghanaian economy. Anning et al. (2016) used ordinary least square with 1990-2015 data to study the influence of public debt (external and domestic) on Ghana's GDP. They found that the connection of growth to debt (internal and foreign) of Ghana's economy is negative.

Sheikh et al. (2010); Okwo et al. (2016); Babu et al. (2015); Forslund, Lima & Panizza (2011); Maana et al. (2008); Anyanwu and Erhijakpor (2004); and Singh (1999) also used a shorter time series data to investigate the relation between growth and domestic debt. For example, the influence of internal debt on Kenya's economy was explored during 1996 – 2007 by Maana et al. (2008). Okwo et al. (2016) also studied the effect of Nigeria's internal debt for the period 1980 - 2015. The results of their study suggested a significant positive relationship between domestic debt and growth in the Nigerian economy. Similarly, Erhijakpor and Anyanwu (2004) covered the period 1970 to 2003 and found that current domestic deficit significant affects Nigerians economy negatively due to the internal rate of interest being high. Same way Clements et al. (2003), Maghyereh (2003), Patillo et al. (2002), Osei (2000), and Iyoha (1999), also used shorter time series data to examine external liability on the growth of the economy. Clements et al. (2003)

considered a time series data from 1970 – 1999 and concluded that foreign liability and the growing of the economy are negatively connected using panel data for 55 low-income countries. Osei (2000) stated that the influence of foreign debt on the development of the Ghanaian economy is negative using 7-year (1983 – 1990) time-series data.

The lack of a consensus surrounding the outcomes of public debt accumulation on economic growth either positively or negatively with most of the studies about the same country or geographical area is related to the methodological differences and also the nature of the studied data employed, which are generally very diverse and often contradictory. These variations suggest an ensuing controversy in the literature about growth and government debt relationship. There is the need for a further empirical investigation into the subject matter although these empirical studies have provided some explanation on the growth and government debt linkage for developing countries.

Alternatively, Aide Wade (2014) also used a lengthier time-series data (1950 to 2014) to study the impact government borrowing has on the growth for the West African Economic and Monetary Zone (WAEMU) and concluded that the effect of debt on growth for the WAEMU is positive at the level of 48% but beyond this level any rise in government debt has an adverse impact on the level of growth in the economy. Rogoff and Reinart (2010) employed prolonged time-series data (1949 – 2009) to investigate the connection of growth and debt of 20 developed countries. They concluded the correlation of high debt level on growth in the economy is negative; though, at the level where debt reaches 90 percent of GDP, there is no link between public debts and growth. Balassone, Francese, and Pace (2011) found that government liability and economic growth in Italy is negatively related with respect to the time series data of 148 years (1861 – 2009) employed. In spite of these studies, there is the need for more empirical studies to also assess finding by previous researchers taking into account diverse settings and too different macro-economic

activities so as to further understand the influence government liability has on Ghana's economic growth. This research, however, seeks to respond to the contextual gap in the literature covering the period 1965 - 2017 to explore the influence of government debt on the Ghanaian economy.

1.3 Research aims and objectives

Chief among the purposes of the research is to investigate the possible connection between government debt on the growth of the Ghanaian economy. The outcome of the study will guide policymakers to make appropriate decisions on whether the government should continue to rely on obligations or resort to additional taxes or some other desirable measures that promote economic growth. In particular, this study:

1. To examine the trend of public debt in Ghana covering the period 1965 – 2017.

2. To examine economic growth patterns in Ghana between 1965 and 2017.

3. To estimate the impact of public debt on Ghana's economic growth 1965-2017.

1.4 Research questions

The following are the study issues:

1. What is the trend of public debt in Ghana covering the period 1965 – 2017?

2. What is the pattern of economic growth in Ghana between 1965 and 2017?

3. What is the impact of public debt on Ghana's economic growth 1965 – 2017?

1.5 Research hypothesis

The study results were concluded based on the hypothesis below:

H_0: There is no substantial impact between public debt on Ghana's economic growth 1965 – 2017.

H_1: There is a substantial impact between public debt on Ghana's economic growth 1965 – 2017.

1.6 Data source and research scope

This study uses secondary data mainly drawn from the WB (WDI, International Financial Statistics) and International Monetary Fund (WEO) 2018 online databases. The study covers a time period of 48 years (1965 – 2017) which includes the long-term impacts of 1980's global debt crisis, the 2008 financial crisis and the current economic downturn on public borrowing and economic growth. However, data unavailability for some of the years served as a constraint for choosing the time period of 53 years for the empirical analysis.

1.7 Research methodology

The study is a causal study which seeks to establish the causal effect of government liability and the expansion of the Ghanaians economy covering 1965 – 2017 using Autoregression Distributed Lag model. The variables of the study are GDP as a proxy to economic growth (dependent variable). The independent variables include inflation, consumption expenditure of the government, population growth, government investment, public debt, and trade openness. The Autoregression Distributed Lag is used instead of Johansen cointegration to investigate a long-run connection since it has an in-built vector error correction model that provides the speed of adjustment from short-run disequilibrium to develop a long-run equilibrium relationship. The robustness of the model will be determined using collinearity and homoscedasticity tests. Secondary data was collected for the study and was analyzed using STATA 13.0 and Microsoft Excel.

1.8 Research significance

The study complements existing and yet to be published studies on the link between debt and economic growth in developing and less-developed economies, as little research is undertaken to achieve a conclusive outcome. It also contributes to studies by Erickson and Owusu-Nantwi (2016) and Anning, Ofori, and Affum (2016) on the effect of public debt on economic growth in Ghana.

This research is premised on the understanding that Ghana, like other developing countries, is suffering from debt burden problem.

1.9 Chapter outline

Chapter One (1) outlined the introduction and significance of the study by providing an overview of the background of the study and the problem and research goals. The literature review consisting of theoretical and empirical research is presented in Chapter Two (2). Chapter three (3) shows the research methods covering the research strategy, research design, data collection, and analysis as well as the limitations of the study. Chapter four (4) presents the data analysis and discussion of results linked to literature. Section five (5) gives the summary, conclusion, and recommendations of the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Introduction

This chapter discusses both theoretical and empirical literature on the relationships between public debt and economic growth both internationally and in Africa. In the first section, the economic growth and debt-nexus theories will be discussed, and some empiric evidence of growth and the debt relation will be discussed in the next section.

2.2 Theoretical review

Two (2) theoretical models that describe the connection between public debt and economic growth are discussed in this section.

2.2.1 Theory of Ricardian Equivalence

The Hypothesis of Ricardian Equivalence (REH) is an economic theory that indicates that regardless of the government's financing of its outlays by debt or tax increase, the effect of the total economic level on demand is identical. Ricardo (1951, p. 247) states that public spending is financed equally by taxation and lending and that municipalities could collect cash through taxes and bonds. The concept stated that potential tax will allow debt repayment, that is to say, by the purchase of bonds given by the state, people will boost their earnings. In theory, the effect of State debt on economic growth is therefore neutral. As securities are credits, they will probably have to be refunded in the future by increasing tariffs. Therefore, the decision is "price now or price afterward" (Afzal, 2012). Barro (1989) asserted that the government's decision by granting tax-reducing bonds should lead customers to lower their taxes and spend them in bonds in an attempt to ensure potential tax increases. Thus, their saving and not their consumption would be increased. Increasing the bond provision would push the interest rate up in an attempt to create a greater requirement for the consumer to consider the bonds as net worth, rather than money. Such a rise in interest rates would result in a replacement of public spending by personal equity (crowding

out). Afzal (2012) says that, when governments reduce taxation and decide to fund their big funding requirements or budget deficit through a problem of bonds, customers are generally sensitive to increasing consumption, because they believe that the State may in future improve wages in order to allow debt to be repaid, and therefore, both debt or fiscal development have no lasting effect on economic growth.

The hypothesis is also founded on two (2) expectations: the first is that both the potential well-being and that of customers are worried. Second, it implies that customers have the authority to change their usage at the moment and either borrow or save them for their usage (Afzal, 2012) (Onogbosele & Ben, 2016). Onogbosele and Ben (2016) also clarified that, if the Government choose to fund its deficits with its bonds or loans to create the trade-off between government savings and private savings, it would save for the future tax increases to be smooth in an economy challenged with fiscal and budget deficits.

2.2.2 Theory of Keynesian

The Keynesian theory shows that a government debt increase, which has been impacted by the deficit-funded fiscal policy, will increase income, money demand and exchange rates. This will lead to a rise in the interest rate on bonds with a set money transaction. In view of government securities as net wealth, the deficit would increase personal consumer spending, interest rates, prices, and transaction demand, according to Keynesian theory. In addition, acceleration effects can strengthen the effects of an increased fiscal policy on asset formation and can, therefore, increase economic growth. The theory is that national debt withdraws cash from private investors, but does not impact consumption because the borrowing funds are injected back into the economy to boost overall demand, possibly through wages and salaries and other capital expense (Onogbosele and Ben, 2016). The Keynesian theory, therefore, moves away from the problem of funding public deficits using either tax cuts or borrowing and focuses on frequent public

interference to boost aggregate demand, jobs, and production as fuelled by government borrowing, either domestically or externally (Nwannebuike, Ike, & Onuka, 2016). Government intervention through lending is probable to lead in an effective macroeconomic outcome such as a decreased interest rate and an increase in infrastructure initiatives that are the catalyst for economic growth (Nwannebuike et al., (2016). They further clarified that the private sector's direct initiative will produce inefficient results owing to its willingness to maximize profit, which leads to higher prices and therefore high-interest rates. It implies that people will not save but invest against the assertions of the Ricardian equivalence principle during the era of tax cuts. It also implies that a potential rise in government-supported taxation will contribute to increased usage, job creation, and production.

In summary, the Keynesian theory predicts that a connection between government debt and development is good without contemplating whether or not public expenditures are profitable, while the claim of Ricardian equivalence suggests that the government spending is used for economic purposes and that the expenditure of governments is an adverse connection. The Keynesian hypothesis hopes that financial policies, fiscal governance, and asset governance will be integrated effectively (Nwannebuike et al, 2016). Debt management focuses on ensuring, in line with prudent threat levels, that the funding demands of the government and their deposit commitments are fulfilled at the minimum feasible price over the mid to long term (World Bank & IMF, 2001). In order to do that, efficient cooperation between financial, fiscal and borrowing strategy is obviously necessary (Blommestein & Tuner 2012).

2.3 Empirical review

This section also focuses on the empirical review presented by several authors on debt and economic growth.

2.3.1 Domestic debt on economic growth

The links between local equity and the rate of growth development in Nigeria spanning the era 1980–2015 were examined in Okwu, Obiwura, Oluwalaiye and Obiakor (2016). In their study, relevant econometric analyses were employed, including Johansen's cointegration and error correction model (ECM). In the study, the actual gross domestic product was included as a measure of economic growth and explanatory variables such as national debt stocks, national debt repayment expenses, government expenditure, and the bank's loan rate. The study showed a positive short and long-term impact on national debt stocks, negative debt servicing expenses and a negative impact on the bank loan rates. Okwu et al. (2016) concluded that domestic debt has short-term and long-term growth capability and that, domestic debt has been used for certain sectors ' development. The analysis also took place in Maana et al. (2008) of domestic debt and its effect on Kenya's 1996–2007 environment. The study found no proof that domestic borrowing in Kenya over the time period crowded private sector lending. Maana et al. (2008) used an improved regression of Barro's growth, including a domestic debt variable, and established a positive, but insignificant effect on the Kenya economy for the period. Christensen (2005) performed a study of internal debt economies between 1980 and 2000 in 27 sub-Saharan African nations. The research was designed to examine whether loans domestically accumulate capital in the private sector. In the research they found that the domestic debt market in these nations was low, the investor base was thin and the research also found that lending was narrow. Deshpande (1990), Mahdavi (2004) and Fosu (2007) considered that expenses in bond servicing can move government spending back from social industries like health and schooling and government investment, which hinder financial development. Forslund et al. (2011) showed that domestic debt is negatively related to inflation and unemployment in emerging nations.

Sheikh et al. (2010) similarly discovered that domestic borrowing had a favorable important connection with economic productivity during the era 1972–2009 when they examined the connection between domestic debt and economic expansion in Pakistan. They explained, this positive relationship, due to the overwhelming effect on private investments and finally output growth, is impaired through the negative important relationship between debt servicing and economic growth. While internal debts may have been channeled into efficient consumption, most have been channeled into unproductive uses such as wages and salaries that generate staggering growth instead of expansion. The writers clarified that the state in Pakistan could increase its internal income tax base, because it may motivate individuals to operate more and earn better wages and salaries through higher taxation. The beneficial connection between internal debt and growth is driven by the advanced domestic debt market, which has been rooted in macroeconomic stability, decreasing usual internal lending and global trading exogenous forces, all of which are equivalent. The link was created by means of the method of OLS analysis.

The amount of domestic borrowing in Nigeria for a 33-year era (1970–2003) is also being investigated by Erhijakpor and Anyanwu (2004). They found that the current liabilities have a negative impact on Nigeria's economic development due to the high domestic exchange level. The research further stated that because of the high-interest rate on government securities, the adverse ratio of the present domestic debt accumulation is not affected by a debt level but by its capacity to reduce personal returns on investment, thus the internal debt hypothesis overhang has been dismissed, which means that it does not keep Nigeria over the reviewed era. Abbas (2005) maintains that the choice to transfer from overseas bonds to local debt is complicated. He found that domestic borrowing is linked badly to economic growth. But if the domestic debt is over 35% of deposits, economic growth is undermined (Abbas 2007). The quality of the domestic debt is significantly determined in his calculus by his optimum size. If the debt is marketably issued for

"non-banking," and has good real interest rates, then it can be sustainable to have a high level of domestic debt as well. Singh (1999) examined the long-term links between national debt and economic growth during the period 1959-1995, using the Johansen co-integration technique. His research backed the Ricardian equivalence theory in India. The theory that public costs are funded by taxation and loans, was noted by the Ricardian equivalence hypothesis (Mill, 1845, p. 230). The reasoning in favor of this is that potential taxation will allow people to reimburse debt, which implies that the government is purchasing the bonds. In the Eastern Africa region from 1990-2010, however, Babu et al. (2015) used the panel's fixed-effect regression model and established positive links between national debt and economic growth. Their study stated that the beneficial connection between East African nations could be linked with a sustainable level of domestic debt, and debt can be marketable. This means the debts are securitized, thereby generating genuine interest rates which encourage private investment and ultimately economic growth

2.3.2 Empirical review of external debt on economic growth

From 1970-1994 in African countries south of the Sahara, Iyoha (1999) analyzed the impact of foreign debt on growth in an econometric model. In the research, the external debt factors had an adverse impact on investment and showed that the amount of exceptional debt discourages investment by two consequences: discouragement and eviction. From a model of aid credit policy, to emphasize the effect on savings of this decrease, it has been concluded that, if borrowing is lowered by 20%, savings will expand by 18% over the era under research and the GDP will increase by 1% if the same decrease is implemented. He found that his study has shown that debt relief will boost investments and promote a return on South Sahara Africa's economic growth. Between 1970 and 1999 in other studies carried out by a community of 55 developing countries, Bhattacharya, Clements, and Nguyen (2003) examined the links between external debt and economic growth. External borrowing is positive for economic expansion in their research. They

also found that when the foreign debt falls significantly, per capita income will grow by a unit percentage per annum. The research also found that if these low-income states ' external service of debt is reduced, economic growth through public investment impacts would rise. Therefore, in some low-income countries, servicing debt in another country would increase economic growth by a further 0.5% per year by half of the debt-service resources for public investment. During the era, 1983–90, Osei (2000) looked at the impact of foreign borrowing on the Ghana economy. The survey found an adverse connection between the Ghanaian economy's foreign borrowing and overall growth. To assess the impact of external debt on economic growth, Patillo et al (2002) used cointegration methods for 1972-2005. They found that foreign debt negatively influences per capita growth. They demonstrate that the investment level and the development of human capital are the main growth drivers of all the factors within this model, whereas the nation is not very beneficial in exposing itself to trade and depreciation of currencies. In contrast, in 1970 – 2000 Maghyereh (2003) used an endogenous growth model to examine how external debt affected Jordan's economy. The studies showed that external debt is relatively strong with economic growth when debt to Jordan's GDP is 53%.

2.3.3 Public debt and economic growth

Hassan and Bakar (2008), and Umutlu et al. (2011) investigated the positive economic impact of public debt, including Dogan and Bilgli (2014), Eberhardt and Presbitero (2015) and Egert (2015), which concluded that a country's debt levels have an adverse connection to its rate of growth. The cointegration of Johansen and the model of the vector error correlation was used by Erickson and Owusu-Nantwi (2016), to examine the long-term and causal connection between Ghana's public debt and economic growth over the period 1970–2012. They discovered favorable and statistically substantial public debt and economic growth in Ghana. In the short run, however, they argued that

the causal connection between the level of growth in the economy and that of government debt was two-way Granger. Erickson and Owusu-Nantwi (2016) suggested that Ghana receive public debt for very significant, well-assessed and self-sustained initiatives and programs that could have a positive impact on the economic growth of Ghana. In order to study the levels of public liability (both overseas and internal) that affect economic development in Ghana, Anning et al. (2016) used Ordinary Least Square (OLS) with information from 1990 to 2015. In Ghana's economy, they noticed an inverse link between the level of a country's indebtedness and growth rate. They found that government debt lending should be reduced and that tax reform programs should increase the basis for revenues. However, in order to examine the debt impact on economic growth for the 21-year (1990 - 2011) period of 19 developing countries, Zouhaier and Fatma (2014) used the dynamic data panel model of the. The findings confirmed Atique and Malik (2012). These indicate that foreign public debt (as a proportion of GDP and gross national income) and economic growth have had adverse and statistically significant relationships. The research also looked at the effect of government borrowing on investment's input on economic expansion. The results also show that investment in 19 countries has decreased when external public debt increases. In the course of the instrumental variable strategy on debt development, the effects of debt on economic growth have been assessed for several OECD countries by Panizza and Presbitero (2012). In the research, the link between public debts and economic expansion has been negative. It should be noted that once the debts are implemented with a variable captured by the communication between foreign currency loans and exchange rates, the links between growth and debt have decreased. Cecchetti et al. (2011) also looked into debt figures for 18 OECD countries between 1980 and 2010 and found that, when the public debt goes beyond 85% of GDP, this will have a declining effect on economic growth and will not enable us to tackle extraordinary events in future. It suggests a 90% GDP threshold for the debt of corporations and households, which represents about

85% GDP. The thresholds between public debt and economic growth in the Caribbean have already been studied by Greenidge et al. (2012). Their research verified the presence of a GDP proportion of 55 to 56 percent limit debt. They also found that the dynamics of debt began to change well before this threshold was met. In particular, rises in the debt-to-GDP proportion are linked to rapid economic growth at debt rates of less than 30 percent of gross domestic product. But the impact on the growth of the economy is quickly reduced, with the level of debt rising beyond 30%, and debt levels of 55-56% of GDP are changing from a positive to a negative one. Therefore, the debt will be a halt to growth beyond this threshold. The study on national borrowing and the level of growth of an economy in OECD countries over the duration of 1996–2007 is reported by Dar Atul and Amirkhalkhali (2014). They used the selected RGLS method and discovered the public debt ratio to be positive, but small and not statistically important. The effect of the debt-to-GDP rate on economic growth was mixed, but it was still insignificant for all the nations except Luxembourg and the United States, on the country-specific estimates of the model. The significant impact of public debt in UK growth has been found by Baro (1989), Camen and Rogoff (2011).

The dynamic threshold panel methodology was employed for 12 European countries to examine the links between public debt and growth in the twenty-year (1990-2010) period (Checherita-Westphal, Baum, and Rother (2012). Their findings reveal a high statistical and beneficial short-run effect from public debt on economic growth, but decrease to null and lose importance if government debt to GDP exceeds 67 percent. Similarly, Reinhart and Rogoff (2010) evaluated the link between public borrowing, unemployment and economic expansion for 20 developed countries over a period of 60 years (1949–2009). In their findings, government debt is high and has a negative effect on economic growth, and thus the link between debt and economic growth is a negative one. However, there is no relationship between the level of debt going beyond 90% of

the gross domestic product. Schclarek (2004) further examines in the account of a span of 1970 to 2002 the public-debt-growth linkage for a variety of emerging and developed nations. He discovered that the greater growth rates for developing countries, which have a reduced foreign debt level, are determined by the rate of public external debt and not the amount of personal outside debt. The research also discovered that the overall government debt is not closely linked to economic growth. Shah and Pervin (2012) have also used certain econometric instruments to address Bangladesh's 1974-2010 borrowing strain and development. The debt pressure was split in two; external debt and external debt. The study found that the impact of external debt service on economic growth is negative in the long term, and the stock of external public debt is positive. In the brief term, though, the economy only has a negative influence on external debt stocks without a major impact on growth. However, for the years 1970–2010, Egbetunde (2012) also explored the connection of Nigeria's vector autoregressive model between public borrowing and economic expansion. The research has shown a dual causality between public debt and economic growth in the Nigerian economy. Government debt and economic growth are therefore long-term and beneficial in that they are designed for their development rather than for their inappropriate areas of economics or for public-private profits. This means that the funds acquired are channeled to suitable areas of development. For a survey of the debt and development center of Cote d'Ivoire, Fofana (2018) used time-series data from 1970 to 2015. The results indicate that the connection between debt and growth is non-linear and, above all, that the debt accumulation affects economic growth at a limit of 42.9 percent. Consequently, given the current rate of 48.3 percent of the debt level in Côte d'Ivoire, there is a concern and a call for more prudential financial management from the public. A study by Aida Wade (2014), covering the period from 1950 until 2014, on public-debt-economic-growth linkage in the West African Eastern and Monetary Union (WAEMU). He used a board of 8 macro-economic factors, using the generalized methods of moments and

discovered that the impact of government borrowing is favorable at the 48% stage on economic growth, including GDP per person, demographic development, unemployment, government bonds. He found that any rise in public debt beyond that stage would have an adverse impact on economic growth.

Caner et al. (2010) provided similar results, an average of 1980-2008 information for a bulk sample of developed countries and emerging nations. The non-linear debt impact on growth implies that an improvement of the government's debt-to-GDP ratio in modest indebted rates helps expand capital and results in quicker progress, with an extra debt over and above the ceiling lowering production development. Reinhard and Vamvoukas (2010) asserted that a government borrowing rise could be of benefit to economic development if the bond is below 90% of GDP, although the link among them reverses after reaching 90% of the debt-to-GDP proportion. In 1970-2007, Woo and Kumar (2010) also examined the economic growth impacts of high debt among advanced and emerging countries. They discovered that the annual expansion in actual GDP per annum declined by approximately 0.2% per annum when the savings to GDP ratio rose by 10 percentage marks. The adverse effect represents a large proportion of a slowdown in productivity growth in employment owing primarily to lower expenditure. The elevated public debt had adversely impacted Pakistan's economy between 1981 and 2008, according to Qureshi and Ali (2010). The positive relationship between public debt and economic growth was established by Spilioti and Vamvoukas (2015) and Teles and Mussolini (2014). The growth of public debt to productivity expenses thus stimulates economic growth. The debt pressure adversely affects economic growth on the productivity of assets and labor, according to Cunningham (1993). Fosu (1996, 1999) found that the debt burden reduces the GDP growth and estimated that a country with high levels of debt, on average, has 1% less GDP growth. Compared to Iqbal and Zahid (1998) and Chowdhury (2001), debt is damaging economic development. Nevertheless, in empirical terms, Lin and Sosin (2001)

discovered that, in African nations, debt has adverse, important relationships with economic growth, but has little impact on Latin America. The connection, however, is good but negligible for Asian nations. Based on these findings, effective debt usage was found to be very crucial to its economic growth impact. Agim (2014) has asserted that increasing and decreasing government indebtedness results from unsound fiscal policies. Debt distress is caused by the degradation of economic institutions as economic policies are continually slow, and external impacts are very vulnerable (Acemoglu & Robinson, 2008; Yasemin, 2017).

CHAPTER THREE

RESEARCH METHODS

3.1 Introduction

This chapter focuses more closely on the variables used in the study as well as the technique used to achieve the set goals. GDP is selected in this study as a representative of economic growth. The research approach is outlined, research designs and techniques are developed, the study model is specified and the models are described. It also shows the study's constraints for further studies.

3.2 Research strategy

Data collected from the World Development Indicators of the World Bank and from the World Economic Outlook of the International Monetary Fund 2018 online databases were used to establish the relation between public debt and economic growth in Ghana. Data from 1965 to 2017 are a yearly time series. This provides a statistically sufficiently large sample size of fifty-three. The period is chosen as the country has had a lot of economic achievements but also a lot of failures. Six macroeconomic variables were used for this study. Phillip-Perron (1988) root test and the Augmented Dickey-Fuller (1979) test was employed to determine the stationarity nature of the independent and dependent variables. It is important to apply the tool of ADF and PP in order to prevent false regression, according to Kuwornu and Owusu-Nantwi (2011), as the majority of time series data are not stationary, so the application of the ADF and PP techniques is required to keep the data stationary before a regression is carried out. They asserted that ADF and PP experiments provide an understanding of whether the variables are non-stationary or fixed and indicate the inclusion rate. For the majority of time series data, the adjustment of false autocorrelations is necessary and scholars must be conscious of this using the ADF and PP experiment methods by placing lagging differential conditions to the right of the equation (Kuwornu & Owusu-Nantwi, 2011). The next method is the Johansen multivariate co-integration experiment for establishing a long-lasting link of the unit root test factors, which demonstrates that

root can be corrected or no unit root can be inserted in the first distinction. When the research finds that after using Johansen multivariate cointegration the factors are cointegrated, the answer will be provided as a long-running relationship occurs between them. In the end, a Granger causality test will be used to measure the short-run causality of variables and the study will use the techniques used to correct the vector error. The short-term cause of the factors assessed by the use of the Wald Test will be determined by the matrix regression system (Owusu-Nantwi et al, 2016).

3.3 Research Design

The concept of studies serves to identify logical and consistent information collection and analysis procedures to tackle the research problem. The plan for incorporating the various parts of studies such as the compilation, procedure, evaluation, and evaluation was established by De Vaus (2001). This research is causal research aimed at determining the causal impact of public debt and economic growth. The spatial research is preferable to abstract because it investigates prior observable phenomena relative to the abstract research depicting the existing position of an observable event (Salaria, 2012).

3.4 Research method

The research method relates to data collection, measurement, and analysis methods based on the study issue (Rajasekar et al. 2006). Research methods assist to explain, measure and evaluate the information gathered, validated and checked to guarantee the accuracy and objectivity of the survey according to Rajasekar et al. (2006). It is different from the research method or design, which aims to logically and systematically bring the different components of research. Three research methods can be used to tackle the issue of study, namely quantitative, qualitative and mixed studies techniques. The quantitative involves the utilization of statistics to establish relationships and to predict observable conduct on the basis of the hypothesis developed by the studies. The qualitative method includes thorough information compilation of real events which

form concepts, while the mixed approach consists of combining the two approaches (Williams, 2007). He argued that since research began with the formulation of a hypothesis out of the research issue, it is therefore important to use a quantitative method of research to establish cause and analyze Ghana's development financing policies and practice. As a contributor to growth theory which leads external assistance as the main cause of development funding for many developing countries, a quantitative method was chosen to a quality approach owing to its capacity to guarantee findings are validated and defined (Leedy & Ormrod, 2001).

3.5 Model Specification

Some factors that affect economic performance have been recognized through macro-economic theory and latest research previously mentioned. The connection between government debt and growth in Ghana was determined through multiple regressions. The model was used to examine Ghana's relation between public debt and economic growth for the era 1970 to 2012 by Owusu-Nantwi and Erickson (2016). The following model is provided for this research:

$$GDP_t = \beta_0 + \beta_1 PD_t + \beta_2 GovE_t + \beta_3 GovI_t + \beta_4 Infl_t + \beta_5 TOpen_t + \beta_6 PopG_t + \mathcal{E}_t$$

GDP_t indicates economic growth and it is measured using an annual percentage growth rate of gross domestic product in time *t*, PD_t at time *t* for government debt and the proxy used is government gross debt, $GovE_t$ at time *t* is government expenditure and it is measured using general government final consumption expenditure (percentage of gross domestic product), $GovI_t$ for government investment and the proxy used is general government investment as a percentage of GDP, $Infl_t$ is inflation, consumer prices (annual percentage), $TOpen_t$ is trade-openness as a percentage of GDP as a proxy for capital mobility, $PopG_t$ is the annual percentage of population growth, β_0 and $\mathcal{E}_t$ are the constant and error term at a time (t) respectively. The study used a population instead of employment due to the unavailability of data estimate on the level of employment in Ghana (Owusu-Nantwi & Erickson, 2016).

3.6 Data collection

Due to the project's brief length, i.e. up to six (6) months, the research used secondary data structures. For pre-study reasons secondary data are collected, so it requires less compilation and review moment than primary sources in which the investigator has contacted the information creators, which is not only huge but also moment consuming (Boslaugh, 2007). In his opinion, secondary data have already been compiled by other units, and it is not necessary that the researcher allocate a lot of time and resources in his gathering, making it cost-effective. Secondary data is preferred to primary data because experts are well known for the measurement analysis based on well-defined, globally accepted standards. For example, the study variables for national and international consumption have already been collected, thus increasing the trustworthiness of the study results (Boslaugh, 2007). Thus, techniques of secondary data analysis were carried out. This helps to find more importance in the interaction between the data when compiled in the first place (Church, 2001).

3.7 Data analysis

Descriptive statistics and multiple regression were included in the main data analysis. The unit root test for unit stability and the cointegration test for establishing long-term relations between the factors are other secondary analyses to be performed. The model's robustness is measured by collinearity and homoscedasticity exams.

3.8 Data analysis techniques

Data assessment methods for the research include the Johansen Cointegration Test, the Dickey-Fuller Augmented Unit-Root Test and the ECM. These methods were intended to develop long-term interactions, the stability of research factors and short-term interactions between factors. The following is a short summary of these methods:

3.8.1 Johansen cointegration

Johansen cointegration is an econometric method of analyzing whether the variables are economically significant, even if not constant. A long-term balance between the variables is an indication that such variables move together for a long time so that short-term long-term shocks are remedied. The lack of cointegration of these factors does not involve a long-run balance connection, thus these factors migrate uniformly from each other. The long-term balance between the factors suggests that linear pairs are becoming static (Engle & Granger, 1987) in non-stationary series. According to Putunoi and Mutuku (2013), a long-term connection exists between economic variables if, despite the trend difference, time-series data move closely. This implies that if the annual change over the period is not continuous, a long-term relationship could be developed. The lack of cointegration, therefore, suggests that the economic variables are not linked in the long term. The Granger causality test is not appropriate for the instances in which macroeconomic variables have been co-integrated. There is thus only a long-term link between the parameters. According to the report by the two groups of experts, Putunoi and Mutuku (2013).

3.8.2 Augmented Dickey-Fuller Unit-root test (ADF)

The Dickey-Fuller Augmented exam is a unit root test that determines the parameter of the variables in advance of establishing a longer-term connection (Kargbo, 2012). According to Kargbo (2012), the first order of integration of all variables is necessary, so that the integration level among the variables must be established before long-run relationships are established. The F-test for cointegration means that the cointegration co-existence values lie with I (0) and I(1). This means that the estimated variables must include either I(0) or I(1), and a unit root test is therefore needed to ensure that neither of these variables goes beyond I(1).

3.8.3 Vector Error Correction Model (VECM)

The vector error correction model shows how much short-term connections are encouraged by the equilibrium conduct of the factors (Kargbo, 2012). If cointegration between variables is present, the use of the vector error correction model (Granger & Engel, 1969) is the best statistical methods to use in an attempt to create a short-term relationship between the variables. Data from time series are tested using both the Johansen cointegration and vector correction models for information on the long-lasting and short-term effects of model models.

3.9 Description of the area study

Ghana is a country with a landmass of 238,535 km of Sub-Saharan Africa. It is situated in West Africa. Burkina Faso, Togo, the Ivory Coast and the Gulf of Guinea respectively are boundary nations to the north, east, and south. The country has a population of about 27 million and averages 7.5% from 2004–2013 and 8.6% from 2009–2013 (Anaman & Agyei-Sasu 2015) as a whole, usually financed through a combination of domestic and foreign aid, with fiscal deficits continuing to arise because of the low level of domestic revenue created by the revenue agencies. This expansion has been motivated by exports of oil, cocoa, gold, and the service sector.

The variables for the research are described as follows:

Economic Growth: This is the GDP growth measure or the annual economic estimator of the growth rate. Spencer et al. (1993) report that economic growth is the growth in the economic output if its level of employment is used fully at constant prices. The OECD (2002) also identifies economic growth as an increase in the total production measure equivalent to, apart from taxes and fewer subsidies for goods other than those in value of production, the sum of the gross added values of all production units. It means the health of the economy and people's living standards. Economic growth is a growth of production or real GDP, just as Schiller (1999). The measurement

can be nominal, which contains inflation, or is actual and inflation-adjusted. Over time, different definitions have been given by various economists of what economic growth is. According to Blanchard and Fischer (2014), economic growth reflects the growth in both labor force and labor productivity. Thus, output growth has come from increasing labor productivity than from an increase in the labor force, which gives total man-hour and output per-man-hour for the private sector (excluding government). Increasing particular macroeconomic indices, such as national revenue, gross domestic product (GDP) or per household earnings also identified Contreras (2007). He stated that national income is generally measured in aspects of the domestic economy's total value-added production recognized as GDP. Hence, there is growth in an economy whenever there is a rise in a country's GDP. In order for the economy to grow, production capability needs to grow over time. Natural resources, human resources, and assets need to be increased. When this happens, the effect of economic growth is realized when the nation's production possibility frontier shifts outward (Samuelson et al., 2010).

In the wake of discussions on the economic growth rates in the different scholarly materials, we can ask what are the determinants of economic growth. Government expenditure is the main determinant of economic growth. In the 19th century assessment of the economic markets of Western Europe, America, and Japan, German economist Adolph Wagner created the Law of increasing governmental activity on the impacts of public expenditure on the economy. He observed that public expenditure through increased industrialization leads to the development of an economy. He also argued that as the real income per capita of the nation increases, the share of public expenditure in the total expenditures increase (Hindriks & Myles, 2013). Baumol's law also stressed that for the public sector to maintain the same level of output over time, government expenditure would have to increase. The above suggests that government expenses and economic

growth have a positive relation. As a way out of the great depression that occurred in the interwar period, John Keynes proposed an increase in public sector expenditure.

However, empirical studies examining the debt growth nexus have utilized GDP growth, real GDP growth, GNP growth, and GDP per capita growth in order to measure growth. This research measures GDP growth as an annual percentage measure for economic growth.

Public Debt: A key variable that determines the indebtedness of a government in a given economy is its debt. It is the percentage of overall debt stock which has a direct change on government revenues. Government debt consists of foreign and internal borrowing. However, government intervention through borrowing is likely to result in an efficient macroeconomic outcome such as reduced interest rate and increased in infrastructure projects, which are the catalyst for economic growth (Nwannebuike et al., 2016). Nwannebuike et al., (2016) were of the view that during the period of tax cuts, citizens will not save but rather spend and therefore future taxes will also increase as supported by government expenditure which results in a higher level of spending, employment, and output levels. Egert (2015) and Anning et al. (2016) empirical research discovered the adverse connection between public borrowing and growth in the economy. Anning et al. (2016) proposed that government borrowing be reduced while the income base is being increased through fiscal reform programs. The public debt and economic growth are good, with the rise in government debt to boost economic growth, as reported in Owusu-Nantwi (2016), Spilioti and Vamvoukas (2015), and Teles and Mussolini (2014). Thus, a positive connection between government debt and economic growth is anticipated.

Government consumption expenditure: It comprises all present public expenses for the acquisition of goods and services (including employee compensation). It also involves most national defense and security spending but excludes state military expenditure in government capital formation. It used to be known as general consumption by the government. Although the

Keynesian model argues that state expenditure increases economic growth, the neoclassical model suggests that the government's spending has no economic growth influence. The issue of government spending has also been researched by some scholars. Among them are, Cooray (2009), Ranjan (2008), Al-Yousif (2000) and Abdullah (2000), argued that the aim of public expenditure is to protect and to provide certain public goods for the citizen, which in turn improves development. However, government expenditure funded from borrowing crowds out private sector investment and therefore causes a decline in economic growth (Folster (2001), Engen (1992), Barro (1991), and Laudau (1986)). The government, according to Folster (2001), creates an economic situation that causes growth rates to decline when resources are misallocated to non-producing sectors, as well as sectors that are able to be more efficiently owned by the private sector. Therefore, this research anticipates an adverse relation between government spending on consumption and economic growth.

Government investment: Investment is called an extension to the current capital stock in a specified era. The government's primary aim is to encourage economic growth by funding public infrastructures initiatives such as highways, colleges, clinics, homes and communications networks. However, certain public goods will not serve the private sector and therefore the public sector will develop (OECD, 2013). From the Keynesian point of view, government investment is a government instrument that increases production at a certain level, enhancing output that adds to aggregate demand and thus increases employment and aggregate demand. According to the Neo-Classical, at the expense of private spending, public investment increase because resources are channeled to the public sector. This move has an adverse impact on economic growth which causes an overwhelming impact both in the private and government sectors that slow down economic growth (Sandler & Hartley 1995). However, the modern opinion refers to the decrease in the amount of GDP that the government increases public investment, which reduces spending on other

economic sectors, in particular, has an adverse effect on both education and the other sectors of the economy (Ambar & Jafar, 2015). Owing to public investment, foreign reserves are reduced due to the purchase of raw materials from other countries (Mshana, 2009). This research anticipates that government investment will adversely affect growth in the economy.

Inflation: This relates to the shift in the price proportion of services and goods over a specific era. Some researchers asserted that the key macroeconomic strategy goals for every country are encouraging economic expansion and keeping unemployment at a small rate. Especially in nations with volatile inflation, the growth of the economy is seen to be influenced (Lartey et al., 2018). The higher inflation rate is having an incline effect on the level of growth in the economy (Tobin, 1965). He asserted that greater inflation rates contribute to real interest rates being smaller which reduce the opportunity cost of investing and also increases the capital-labor ratio. An increase in the capital-labor ratio leads to an increase in output. Contrary, Barro (2013), is of the view that inflation impacts economic development negatively in the long-run. The nonlinear connection between the reduced rate of inflation and growth has also been identified by Fisher (1993). Bruno and Easterly (1998) said that the inflation rate is at a high point but there was no proof to support low inflation rates in boosting development in a specified economy. Giving, Orphanides and Judson (1999), inflation and economic growth are negatively correlated and for that matter, macroeconomic policies should be directed towards reducing and or stabilizing the rate of inflation to promote growth as a higher rate of inflation has a harmful effect on growth (Bittencourt, 2012). Inflation is anticipated to be negatively linked to economic growth.

Trade Openness: It is the sum of the exports and imports of products and services as a proportion of the gross domestic product. The significance of trade as a key driver of growth among countries was obviously indicated in Smith's (1776) and Ricardo's (1817). Smith noted that the main advantage of trade is the provision of a means for excess production of a country to go ahead. It

also yields to the trading sector for this surplus payment. The labour and resources used to generate a nation's excess output will therefore not be wasteful but will profit from the trade (Smith, 1776). For Ricardo, trade was viewed from the theory of comparative cost advantage. When there are perfect competition and full employment, countries benefit by producing the good in which they have the lowest opportunity cost and trading it for the one with the highest opportunity cost. By assuming there are only two countries in the world and that they produce only two commodities, they would both benefit and hence promote economic growth (Pandhi, 2007). Therefore, international trade serves as a catalyst for competition among countries and therefore result in an increase in productivity, consumer satisfaction and innovation (Winter, 2004). It also allows the allocation of resources efficiently in the local and foreign markets (Chang et al., 2005). Trade openness, therefore, has a positive impact on economic expansion (Romer, 1993). However, this research anticipates a positive connection between trade openness and growth of the economy.

Population Growth: This is the term used to describe the level of growth in population from one particular year to another year, let say from period y to period y+1. The reported percentage of population growth was calculated by the yearly population increase. Although some studies have found that population growth and economic growth are negative, Lartey et al (2018) considered that population growth is likely to increase labor force strength as well as consumer strength within the region. A Chang et al. (2014) research suggests a substantial connection between population expansion and the growth of an economy. They have found that the positive impetus is driven mainly by consumption, investment, and manufacturing. Therefore, this research expected that population growth and economic growth would have a positive connection.

TABLE 3. 1: SUMMARY OF VARIABLES, EXPECTED SIGNS OF THEIR COEFFICIENTS AND DATA SOURCES

VARIABLE	MEASURE USED	EXPECTED SIGN	SOURCE
Economic growth	GDP growth (annual %)		WDI
Public debt	Gross government debt (% of GDP)	+	WEO database of the IMF
Government expenditure	General government final consumption expenditure (% of GDP)	-	WDI
Government investment	General government investment (% of GDP)	-	WDI
Inflation	Inflation, consumer prices (annual %)	-	WDI
Trade	Trade Openness (% of GDP)	+	WDI
Population	Population growth (annual %)	+	WDI

3.10 Limitation of the study

The accuracy of the variables used for the study is beyond this study since they are secondary data collated by government institutions for both national and international analysis. The study is also limited by data unavailability for some of the years on some important variables such as foreign direct investment and also general government investment (% of GDP), thus the choice of the period covered and variable considered for this study. However, the study ensured that the accuracy of the data variables was sustained during data processing.

CHAPTER FOUR

DATA ANALYSIS AND DISCUSSION OF RESULTS

4.1 Introduction

The results of the study are presented in this chapter with the objectives of the study. The chapter begins with a summary of the descriptive statistics about the data on public debt, economic growth, expenditure on public consumption, investment of government, inflation, the openness of trade and growth of the population.

4.2 Summary Statistics

4.2.1 Descriptive Statistics

The data for the study based on Ghana's macroeconomic indicators from 1965 to 2017 (covering a period of 53 years). The key variables included in this study are annual percentage growth of gross domestic product (GDP), percentage GDP of gross government debt, general government final consumer spending as a GDP proportion, GDP-based investment by the general government, annual percentage of inflation or consumer prices, trade openness as a percentage of GDP, and annual percentage of population growth. In understanding the data characteristics of the population through which the sample data was drawn from, it is necessary to do a descriptive statistic (Larson, 2006).

TABLE 4. 1: DESCRIPTIVE STATISTICS

Variable	Obs	Mean	Std. Dev.	Min	Max
GDPt	53	3.631358	4.550083	-12.432	14.047
PDt	53	40.67772	25.02049	5.04	111.95
GOVEt	53	11.0404	2.337908	5.861	16.765
GOVIt	53	4.973434	1.730171	2.181	10.5
INFLt	53	27.90713	27.3446	-8.422	122.875
TOPENt	53	56.62308	29.32435	6.32	116.048
POPGt	53	2.537434	0.3789672	1.603	3.482

Table 4.1 above indicates that the annual percentage of economic growth in Ghana for the period of the study shows a mean of 3.63 percent and a standard deviation of 4.55 percent, representing a spread of 0.92 percent. The minimum growth rate was -12.43 percent recorded in 1975 with a maximum of 14.05 percent noted in 2011. The proportion of Ghana's public debt as a percentage of GDP averaged 40.68 for the period of study, with a variation of about 25.02. The minimum public debt to GDP was 5.04 percent recorded in the year 1982 as compared to the maximum of 111.95 percent in 2000. The maximum debt was recorded in that year because prices of gold and cocoa dipped against a rise in the amount of crude oil and also domestic performance in the economy that year was weaken resulting in the imbalance in the financial gains which caused a sharp rise in monetary growth leading to the substantial reductions in production and consumption (African Economic Outlook, 2002).

The average government spending was 11.04 percent and a standard deviation of 2.34 percent. Ghana seems to have had its minimum government spending in 1983 (5.86) and the highest of 16.77 percent of GDP in 1968. However, the average rate of government investment was about 4.98 percent with a lower variation of 1.73 percent, investment was low at 2.18 percent in 1990 and maximum of 10.5 percent of the country's GDP in 2008. On the other hand, inflation for the period of study averaged 27.91 percent and a deviation of about 27.34 percent indicating a close spread around the mean. The minimum rate of inflation was also recorded in 1967 (-8.422 percent of GDP) and 122.88 percent higher for the year 1983. This high volatility is in connection with the depreciation and the counter depreciation of the currency (Fosu, 2001).

Furthermore, the average trade openness was 56.62 percent and a variation of 29.32 percent representing a wide spread of the distribution of import and export as a ratio of Ghana's GDP. The minimum amount of trade openness was 6.32 percent which was witnessed in 1982 and the maximum of about 116.05 percent seen in 2000.

The growth rate of Ghana's population averaged about 2.54 percent and a lower standard deviation from the mean of 0.38 percent. For the year 1978, Ghana recorded a minimum annual population growth rate of about 1.60 percent and a maximum annual growth in the country's population of 3.48 percent in 1983.

4.2.2 Correlation Matrix

The association between the variables is very important in doing further analysis. Table 4.2 below indicates the correlation that exists between the variables of interest under this study. The correlation matrix shows there exist a significant correspondence of economic growth and all the variables. Table 4.2 provides a positive link between economic growth and all of the macroeconomic variables covered in this study with the exception of inflation and populations with an inverse connection to economic growth.

TABLE 4. 2: CORRELATION MATRIX

	GDPt	PDt	GOVEt	GOVIt	INFLt	TOPENt	POPGt
GDPt	1						
PDt	0.3242*	1					
GOVEt	0.0218	0.0169	1				
GOVIt	0.3820*	0.3890*	-0.0186	1			
INFLt	-0.3600*	-0.3303*	-0.2428	-0.3019*	1		
TOPENt	0.4331*	0.8816*	0.0318	0.5909*	-0.4444*	1	
POPGt	-0.0443	-0.0974	-0.4340*	-0.3360*	0.0035	-0.1839	1

Note: Statistical significance of the pairwise correlation is denoted by * at 5% level.

4.3 Discussion of Findings

This section of the chapter presents the results of the study. The results are presented in tabular and graphical forms for simplicity and clarity.

4.3.1 Objective 1: Economic growth pattern of Ghana from 1965 to 2017

The first goal of the study is to determine Ghana's economic growth pattern from 1965 to 2017. The finding is presented in a graphical form to make it easier for analysis and justification.

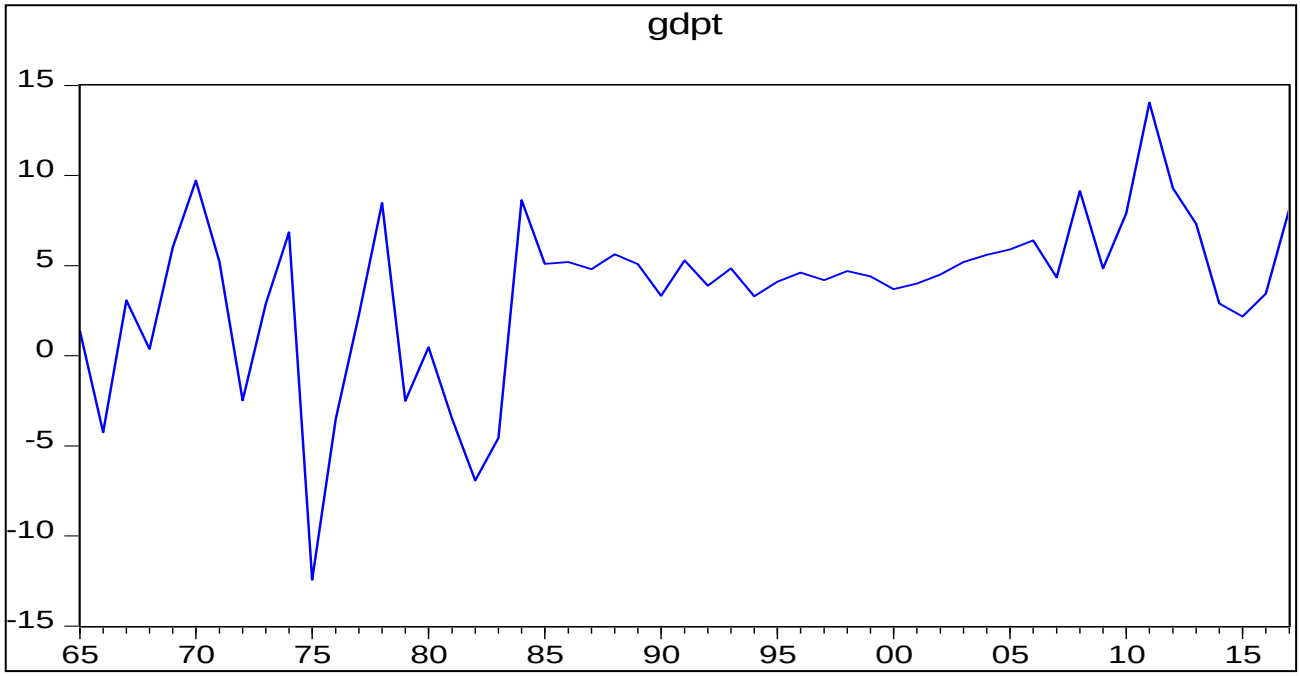

FIGURE 4. 1: ECONOMIC GROWTH PATTERN IN GHANA FROM 1965-2017

Figure 4.1 shows the pattern of economic growth in Ghana covering the year 1965 to 2017. It should be stressed that GDP is used as a proxy for economic growth in this study, which is measured as the annual economic growth percentage. The pattern in figure 4.1 above shows that the economic growth of Ghana has been fluctuating. It is observed that Ghana economic growth reached a trough in 1975 recording -12.4% GDP. Various reasons are ascribed to this lowest low in economic development. Typical among the reasons is the Coup D'etat that occurred in the country bringing almost economic activity to a halt.

Between 1985 and 2007, Ghana recorded a seemingly stable economic growth. During these periods, there was somewhat political stability and hence there was a conducive environment for businesses to flourish. It is therefore not surprising that during those periods the GDP growth

which is a proxy for economic growth was quite stable and relatively high.

Figure 4.1 shows that Ghana recorded almost 15% GDP growth rate in 2011-2015. GDP reached its peak because Ghana had just joined HIPC and hence was relieved of any debt obligations and further received financial cushioning from some donor countries coupled with a smooth transitioning from one political party which boost investor confidence in the country.

All in all, it can be concluded that between 1965 and 1984, the economic growth of Ghana has been a quite unstable recording some unpredictable upwards and downwards trend. From 1986, the country observed stable and positive economic growth.

4.3.2 Objective 2. The trend of public debt in Ghana covering the period 1965 – 2017.

In line with one of the crucial objectives of this study which aims at examining the trend of public debt in Ghana, the research presents a graph to show the movement of public debt which comprises of both internal and foreign borrowings. The finding is presented in figure 4.2.

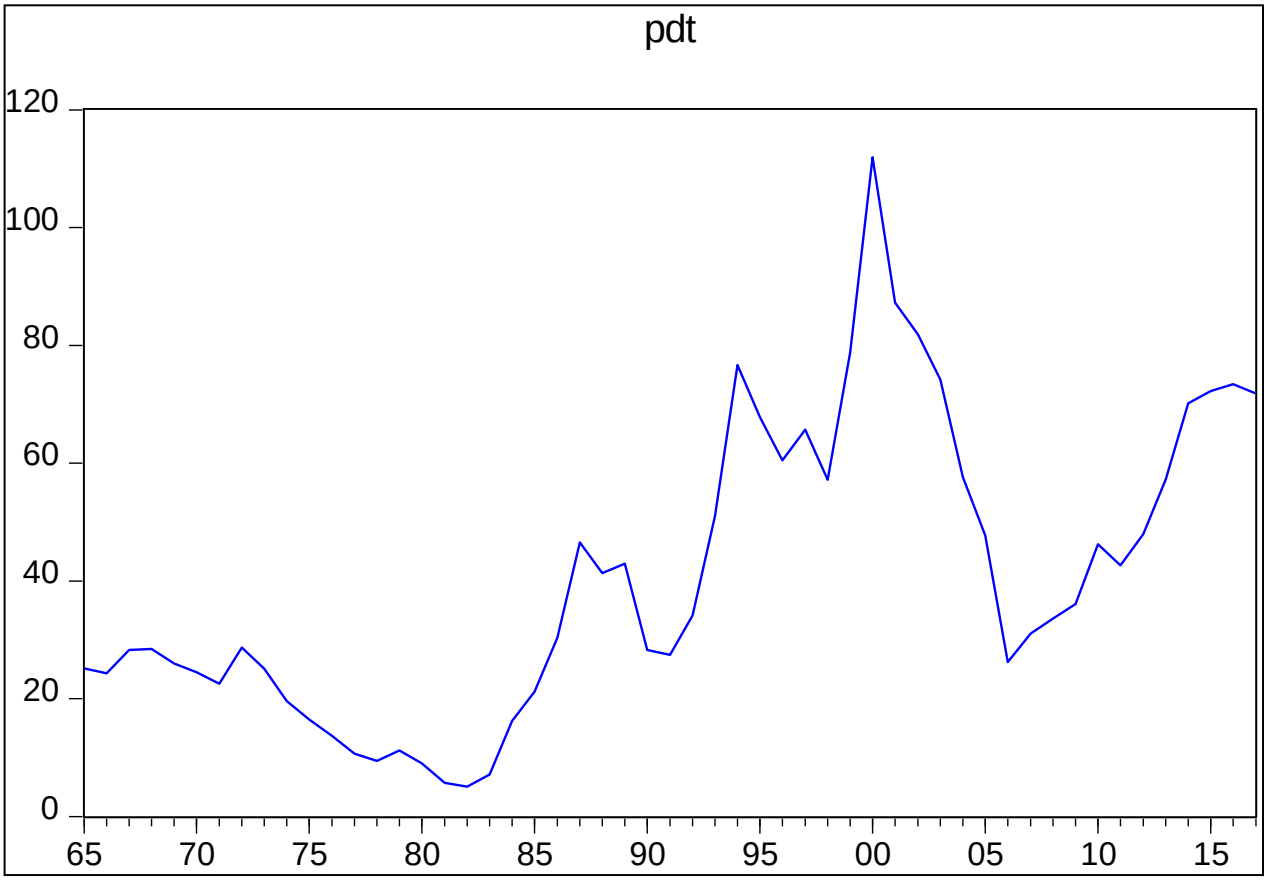

FIGURE 4. 2: TREND OF PUBLIC DEBT IN GHANA COVERING THE PERIOD 1965 – 2017.

Figure 4.2 presents the trend of Ghana's public debt since 1965. The trend as shown in figure 4.2 depicts the percentage of overall debt stock which has a direct change on government revenues. The trend shows that Ghana debt reached its peak in 2000. Research has established that for about a decade in 2000, Ghana's economy suffered its worst growth performance when real GDP growth dropped to 3.7 percent. Economic performance decrease persisted in 2000 for four consecutive years. This poor performance in 2000 was attributed to the deterioration in trade with gold and cocoa, the key export earners of the country, falling as the price of crude oil— the main import commodity of the country — rose rapidly. This further led to a significant decline in exchange earnings. The poor overall economic output that led to fiscal imbalances and excessive monetary growth has made external problems even worse, leading to a considerable reduction in

manufacturing and consumption. In Ghana's attempt to compensate for losses in 1999-2000, borrowing was used to cause a spiral in government debt.

Figure 2 shows that the minimum public debt within the years under review was recorded in the early 80s. It can also be observed that from 2015 to 2017, Ghana's public debt has been rising even though at a reducing rate. This indicates that measures have been put in place to reduce the spate of borrowing in Ghana. All in all, it is worthy of concluding that the debt level of Ghana, just as the economic development of the country, has witnessed several ups and downs from 1965 through to 2000 but recorded some relative stability thereafter.

4.3.3 Objective 3: Establish a connection between economic growth and government debt in Ghana, including 1965-2017.

The third objective of the study is to explore how economic growth and public debt relate to one another. In order to achieve this research objective, regressions were run and the results presented in tabular form for clarity.

TABLE 4. 3: REGRESSION RESULTS FOR ECONOMIC GROWTH AND PUBLIC DEBT

GDPt:	Model 1	Model 2	Model 3	Model 4	Model 5
PDt	0.0587**	0.0589**	0.0419*	-0.0470	0.0376
	(0.0245)	(0.0244)	(0.0243)	(0.0399)	(0.0234)
POPGt	-0.154				
	(1.940)				
GOVEt		0.0318			
		(0.293)			
INFLt			-0.0472**		
			(0.0197)		
TOPENt				0.103***	
				(0.0354)	
GOVIt					0.793***
					(0.258)

_cons	1.633	0.884	3.245*	-0.264	-1.843
	(5.230)	(3.561)	(1.707)	(1.506)	(1.777)
N	53	53	53	53	53
F	2.895	2.912	6.459	6.429	6.681
P	0.065	0.064	0.003	0.003	0.003

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

The regression results for public debt's effects on economic growth in Ghana are presented in Table 4.3 above and the various variables considered in the model are controlled in a separate regression of public debt's impact on economic growth.

Table 4.3 of Model 1 indicates that there is a positive link between public debt and growth while controlling population growth in Ghana. This implies that an increase whenever there is a rise in public debt in Ghana, it does not matter the rate of population growth, GDP selected in this study as a representative of economic growth increases. What this means is that credit acquisition from other countries and institutions is essentially positive for a country's economic performance, irrespective of its population growth rate. This supports the findings of Égert, (2015) who opined that the perception that citizens hold that debt is bad is a myth. The study further indicated that debt used for economic purpose have a ripple influence on the overall economic growth of the country and hence public debt in Ghana seems helpful in enhancing economic growth in the years under review. In all, from the table, an increase in public debt has increased in economic growth while controlling for the population growth rate.

The second model of the study i.e. model 2 takes into consideration the impact of public debt on economic growth in Ghana between 1965 to 2017. This model controlled for government expenditure. The study found that public debt has a substantial and positive effect on economic growth. It is however surprising to observe there is no correlation between government expenditure and economic growth since spending by government propels cashflows in an economy and

consequently, to a large extent, leads to economic growth. However, a study by d'Agostino, Dunne, and Pieroni (2016) postulate that if government expenditure is not geared towards productive activities there is the high tendency that the expenditure will cause negative repercussions than positive impacts. The study showed that public debt had a positive impact on economic growth with respect to the variable of interest. This further affirms the earlier findings of who Benoit (1973), Nguyen, Clements, and Bhattacharya, (2003), Égert, (2015) who also found that public debt of a country has a positive impact on the economic growth of a country. It is therefore not surprising that this study found that public debt in Ghana has had a positive impact on the country since 1965-2017 after controlling for expenditure in model 2 of the study.

The third model also considered how public debt impacts economic growth after interacting it with inflation. In this model, it is observed that economic growth rises with and when public debt rises. In essence, and as observed in the earlier models, public debt has a positive impact on economic growth. This is similar to the findings of Lee and Ng (2015) who described public debt as a blessing in disguise since it has the potential to improve the economic fortune of countries provided loans acquired are used for the intended purpose. The controlled variable, inflation, is negatively correlated with economic growth. In situations where inflation rises, the cost of production increases and this has a bearing on the cost of goods and services. People will need to spend more on goods and services. The ripple effect is that the currency loses its value over time. This consequently leads to low economic growth. Therefore, an adverse relation between inflation and economic growth in Ghana is practical and therefore reasonable in real-life circumstances. In other jurisdiction where similar studies have been undertaken, the findings have been the same as has been observed in this study. Notable among the earlier studies include Chu, Cozzi, Furukawa, and Liao (2017), Johnson (2017).

Model 4 tried to interact with public debt in Ghana from 1965-2017 with trade openness and

observed that trade openness has a beneficial and substantial effect on economic growth. It is observed that public debt did not show any significant effect. In essence, an increase in the ease of capital mobility in a country has a high tendency of enhancing the economic growth of that country under consideration. In this case, contrary to what was observed in previous models, loans acquired do not propel growth in Ghana after interacting it with trade openness. Trade openness has a positive effect on the Ghanaian economy, on the other hand. Sakyi, Commodore and Opoku (2015) observed that trade openness provides the enabling environment for firms to operate and expand the economy. This supports the findings in the study of Alagidede and Ibrahim (2017) who observed that even though trade openness has its negative consequences, its positive impact far outweighs the negatives if properly controlled and managed.

Finally, the last model indicates that government investment increases economic growth. This finding is, a priori, very much expected. Investment by the government in any sector of the economy promotes growth and this is seen in countries that have witnessed a massive investment by government in the various sectors particularly in education, agriculture and health (Lall, Navaretti, Teitel & Wignaraja, 2016; Aryeetey & Fenny, 2017). All in all, the government's investment in the Ghanaian economy enhanced economic growth and development in the years under review.

TABLE 4. 4: REGRESSION WITH NEWEY-WEST STANDARD ERRORS AT VARIOUS LAGS

	Lag (0)	Lag (1)	Lag (2)	Lag (3)	Lag (4)
PDt	0.0588**	0.0588**	0.0588**	0.0588**	0.0588**
	(0.0248)	(0.0279)	(0.0284)	(0.0279)	(0.0271)
GOVEt	0.0259	0.0259	0.0259	0.0259	0.0259
	(0.280)	(0.273)	(0.266)	(0.270)	(0.256)
POPGt	-0.0841	-0.0841	-0.0841	-0.0841	-0.0841
	(1.897)	(1.819)	(1.581)	(1.354)	(1.227)
_cons	1.167	1.167	1.167	1.167	1.167
	(6.318)	(5.585)	(4.877)	(4.525)	(4.097)
N	53	53	53	53	53
F	1.906	1.498	1.456	1.510	1.590
P	0.141	0.227	0.238	0.224	0.204

Standard errors in parentheses
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Table 4.4 above is a robustness test to show how public debts in Ghana have interplayed with other economic variables to influence economic growth. The variable of interest in this study is public debt. From Table 4.3, it is observed that the variable that significantly influenced economic growth in Ghana in the years under review is public debt. The study observed that public debt has a positive and significant impact on economic growth in Ghana. This confirms previous and scholarly studies of Benoit (1973), Nguyen, Clements, and Bhattacharya, (2003), Égert, (2015). This indicates that during those years, loans acquired were used for developmental projects that have had a positive impact on the economy. This is evidenced in Table 4.4 even after considering the lags.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 Introduction

The study directed at identifying the connection between government debt and economic growth in Ghana during 1965-2017. The results are summarized and the results are drawn up in this section. The result provides the prospects for the deductions and conclusions from the research results. The section concludes with a few strategies and further study suggestions.

5.2 Summary of Findings

Following the debt crisis which took place in the mid-1970s and 80s, the issue of public debt is more topical now in most developed and developing countries which Ghana is not an exception, because of its impacts on economic growth. Studies include Fosu (1996, 1999), Presbitero and Panizza (2012), Cecchetti, Zampolli, and Mohanty (2011) and Anning et. al (2016) found the public debt-to-economic growth connection to be negative while Erickson and Owusu-Nantwi (2016) also used the vector error correction model and the Johansen cointegration data analysis techniques and found a positive connection between government debt and growth in Ghana.

This study examined the trend of public debt, economic growth, and also the connection that exists between Ghana's government borrowing and economic growth from 1965 to 2017. GDP is used in this proxy for economic growth which is measured as an annual percentage measure for economic growth and the measure for public debt is government gross debt as a percentage of GDP. The findings from this study indicate that the growth of Ghana has been fluctuating. It is observed that Ghana economic growth reached a trough in 1975 recording -12.4% GDP as a result of the Coup d'état that occurred in the country bringing almost economic activities to a halt. It

can be determined that between 1965 and 1984, the growth of Ghana's economy has been a quite unstable recording some unpredictable upwards and downwards trend. From 1986, the country observed stable and positive economic growth. In line with the trend of public debt in Ghana for the period of study, it is observed that Ghana's debt reached its peak in 2000. It was during this period that the real GDP growth of the economy slumped to 3.7 percent. However, the poor performance was attributed to terms of trade deterioration as the prices of gold and cocoa dipped against a rise in the amount of crude oil and also domestic performance in the economy that year was weaken resulting in the imbalance in the financial gains which caused a sharp rise in monetary growth leading to the substantial reductions in production and consumption (African Economic Outlook, 2002). So, in the quest to make up for the losses in the periods 1990 – 2000, the government resorted to borrowing thereby causing the sharp increase in the level of debt in the country. Hence, public debt and economic growth in the country has witnessed several upward and downward trends from 1965 through to 2000 and thereafter recorded a relatively stable trend.

In addition to establishing the relationship between public debt and economic growth in Ghana, the study also finds it beneficial to run separate regression with Newey-West standard errors while controlling for the various variables under consideration in different models. These controlling variables include population growth, government expenditure, inflation, trade openness, and government investment using the OLS model with robust standard errors. In the first and second models of regression analysis, there is a substantial and positive relationship between public debt and economic growth while controlling for population growth and government expenditure in Ghana. In the third model, it is detected that when public debt increases, economic growth also rises but inflation is negatively correlated with economic growth. However, it was only trading openness that has a positive and significant influence on economic growth as public debt did not show any significant effect and this was evidenced in the fourth model and lastly government

investment increases economic growth of the fifth model in the regression analysis. A robustness test was also conducted to show how public debts have interplayed with other economic variables to influence growth in Ghana for the period 1965 to 2017 as the variable of interest in this study is public debt.

The study concluded that the only variable that significantly influenced economic growth in the years under review is public debt and it has a positive impact on growth in Ghana. This study found evidence to support the positive impact of public debt on economic growth in Ghana, indicating that during those years, loans acquired were used for developmental projects that have had a positive impact on the economy.

5.3 Conclusions

The primary focus of the study was to establish the connection that exists between economic growth and government debt in Ghana covering the period 1965 to 2017. From the findings above, it is concluded that public debt has a positive impact on economic growth in Ghana. This means that loans that were acquired from other countries and institutions were used or invested in developmental projects other than personal consumptions by government authorities. The study also showed a negative correlation between inflation and economic growth, thus periods, where inflation was higher its effect on the economy, is negative as against the period where the level of inflation was lower. Thus, during the period where the country experienced lower inflation, economic activities were positive as covered under this study.

Similarly, trade openness was the only variable that has a positive and significant impact on economic growth and no significant effect on public debt. This implies that an increase in the ease of capital mobility in Ghana has a high tendency of increasing the growth of the economy. The study also observed no correlation between government expenditure and economic growth since government spending propels cashflows in the economy and consequently leads to increasing the

growth of the economy to a large extent. Finally, the study found that investments in the form of education, agriculture and the health sector by the government have enhanced growth and development in the years under review.

5.4 Recommendations

From the above findings and conclusions, the recommendations of the study are as follows:

1. The government should ensure that borrowing both internally and externally is allocated to sectors of the economy that would drive growth. That is loans should be channeled towards productive units than used to finance consumption expenditure which can cause stagnant growth. This can be achieved by policy directive which indicates the proportions of public debt fund which used be allocated for capital investment and consumption purposes. This can be followed by effective monitoring mechanisms to ensure its implementation.
2. Because of the limited range of the research, a number of fields are necessary for further study. Further research on the field might be facilitated via a significantly broader data set and the use of different methodologies that record the effects of debt maturity structure, currency composition, and interest rate.
3. Further research can also look at the threshold analysis of public debt on the growth of Ghana's economy. It would also be interesting to also look at the threshold effects of the various components of government debt (i.e., foreign and local debt) on Ghana's economic growth.

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