

**KWAME NKRUMAH UNIVERSITY OF SCIENCE & TECHNOLOGY, KUMASI**

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**FACULTY OF SOCIAL SCIENCES**

**DEPARTMENT OF ECONOMICS**

**THE EFFECT OF OFFICIAL DEVELOPMENT ASSISTANCE AND FOREIGN  
DIRECT INVESTMENT ON ECONOMIC GROWTH IN GHANA (1975-2014)**

**A THESIS SUBMITTED TO THE DEPARTMENT OF ECONOMICS, IN PARTIAL  
FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF MASTER OF  
PHILOSOPHY DEGREE IN ECONOMICS**

**BY**

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**MAY, 2016**

## DECLARATION

I hereby declare that this submission is my own work towards the MPhil Degree in Economics and that to the best of my knowledge, it contains no material previously published by another person nor material which has been accepted for the of any other degree of the University, except where due acknowledgement has been made in the text.

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## DEDICATION

This work is dedicated to my mother, Madam Paulina, for her unflinching support, love and encouragement throughout this study.



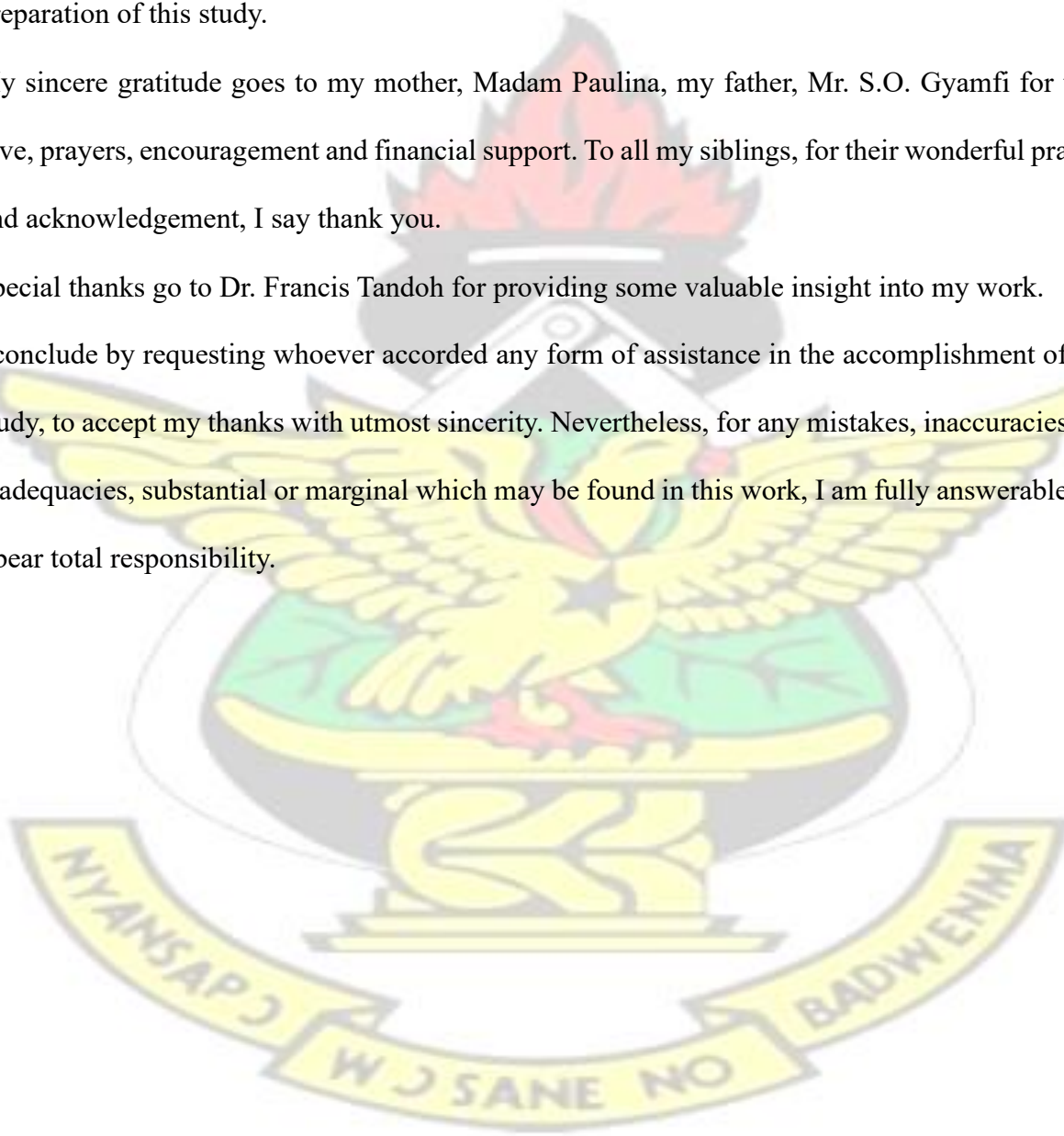
## ACKNOWLEDGEMENTS

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My sincere gratitude goes to my mother, Madam Paulina, my father, Mr. S.O. Gyamfi for their love, prayers, encouragement and financial support. To all my siblings, for their wonderful prayers and acknowledgement, I say thank you.

Special thanks go to Dr. Francis Tandoh for providing some valuable insight into my work.

I conclude by requesting whoever accorded any form of assistance in the accomplishment of this study, to accept my thanks with utmost sincerity. Nevertheless, for any mistakes, inaccuracies and inadequacies, substantial or marginal which may be found in this work, I am fully answerable and I bear total responsibility.



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## ABSTRACT

This study examined the effect of official development assistance and foreign direct investment on growth in Ghana and analyzed the fiscal response effect of ODA. Specifically, the study investigated the long run effect of ODA and FDI on economic growth using Johansen cointegration approach to establish the presence of long run cointegration relationship among the variables. The fully modified ordinary least squares (FM-OLS) was used to estimate the long run effect of ODA and FDI on economic growth. Lastly, the seemingly unrelated regression (SUR) method was used to estimate the fiscal response effect of ODA in Ghana.

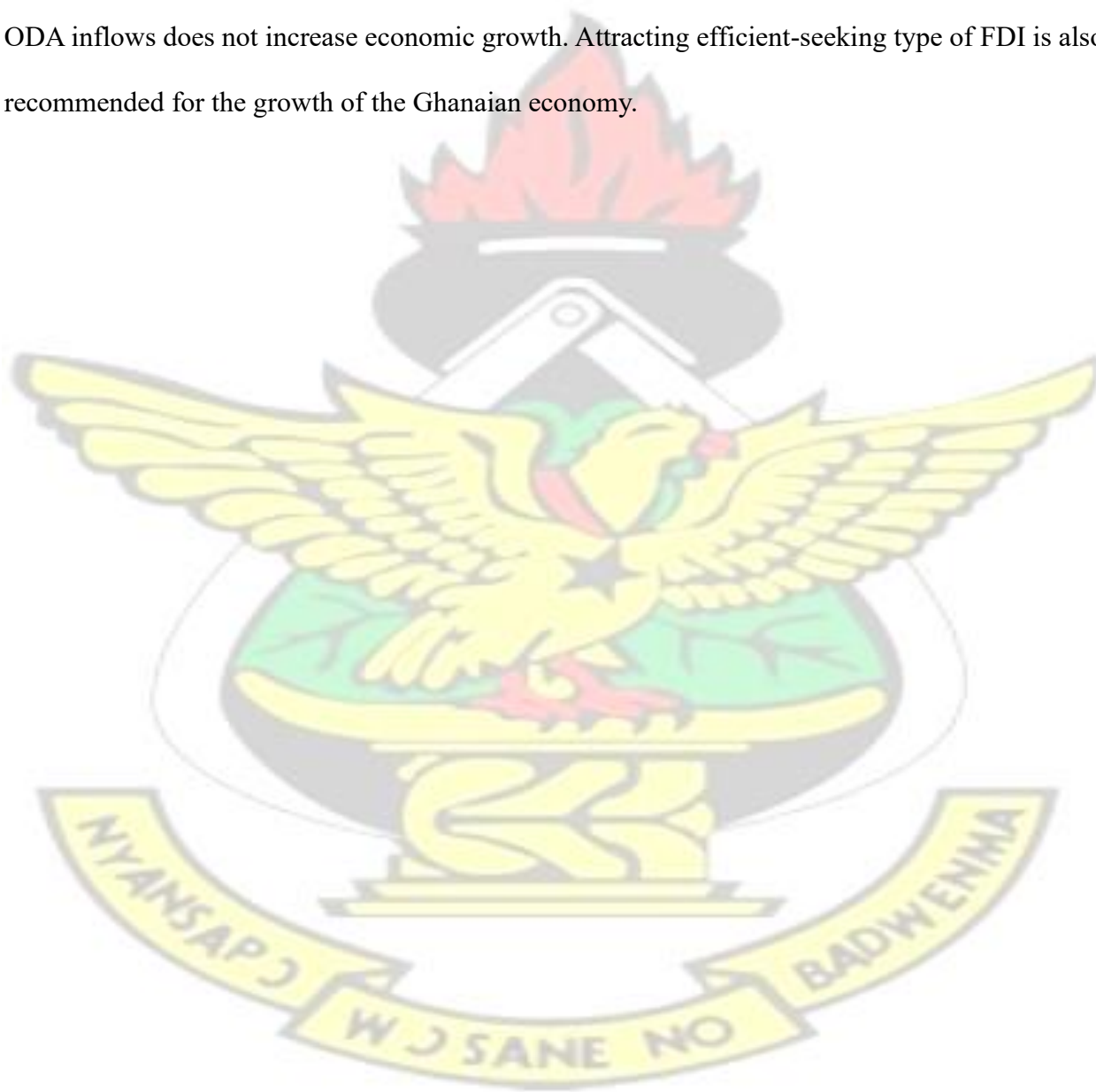
Results of the long run analysis showed that there exists statistically significant negative relationship between ODA and economic growth while a positive but insignificant relationship was found between FDI and economic growth.

The results of the fiscal response model indicated that public investment spending increases with increase in official development assistance. Domestic tax revenue was found to be a significant driver of total public spending, which gives an indication that Ghana is not over-dependent on



ODA inflows. The government of Ghana is seen as focused on tax efforts and the desire to raise public sector borrowing requirement without depending so much on donor-support funds.

The study therefore suggests implementation of sound monetary policies that aim at effective control of domestic funds (tax revenue) as well as stabilization policies such as low and stable inflation rate and stable domestic currency for smooth economic activities in the country since ODA inflows does not increase economic growth. Attracting efficient-seeking type of FDI is also recommended for the growth of the Ghanaian economy.



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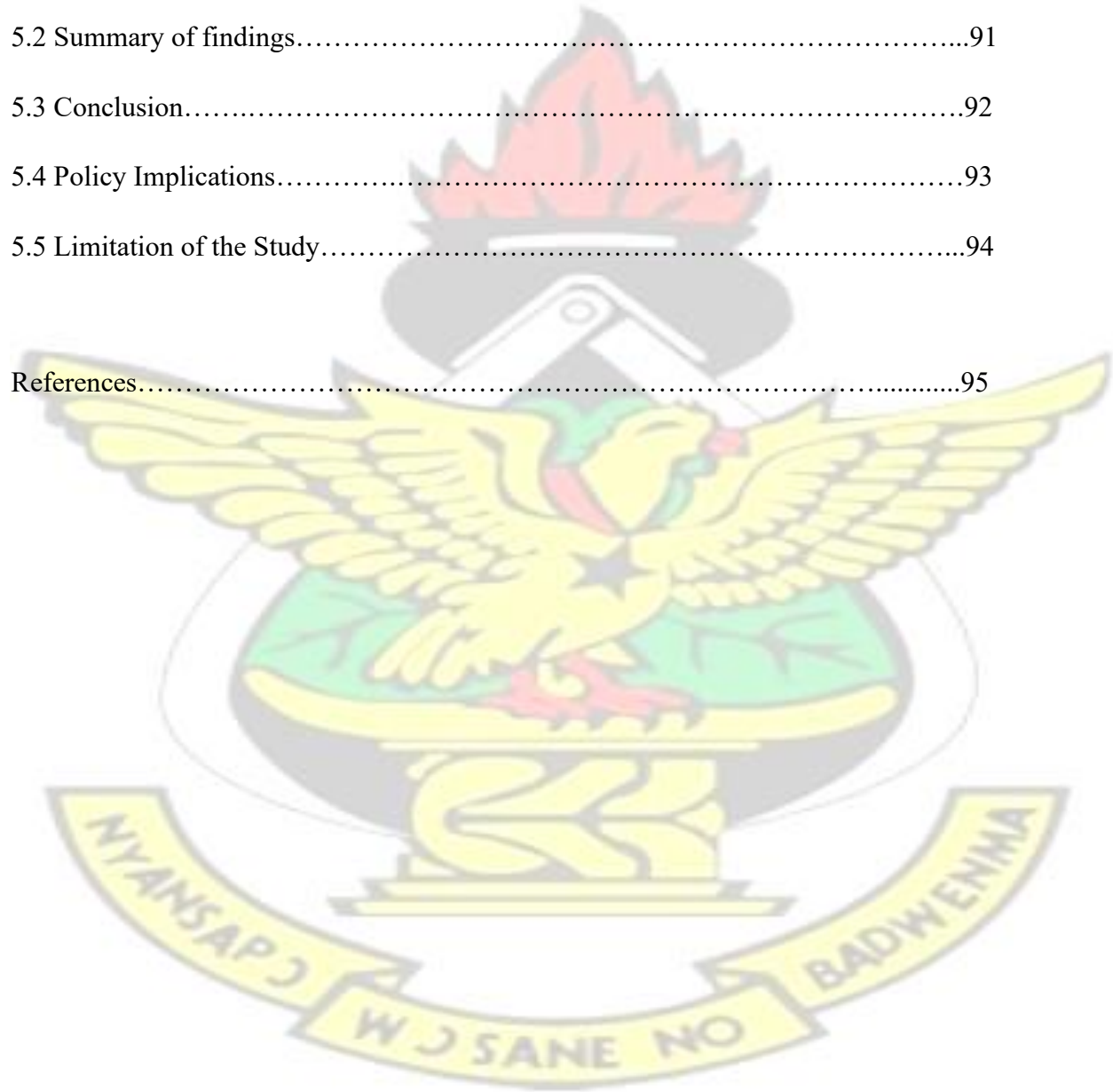
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## CHAPTER ONE

### INTRODUCTION

#### 1.1 Background to the Study

Researchers and Policy makers have sought for numerous ways to improve economic growth.

Theoretically, the Neoclassical growth model (based on Solow's growth model) have emphasized the importance of investment while endogenous growth theory developed by Romer (1986) and Lucas (1988) has focused on the role of human capital and innovation capacity. According to both theories, the rate of economic growth is said to increase as capital and natural resources increase in quantity and quality. Though capital goods require a huge initial outlay, they promote higher productivity and enhance growth in the long term. In the two-gap theory developed by Chenery and Strout (1966), developing countries can reduce the huge capital deficit through development assistance inflows. Thus, ODA inflows to these countries will help supplement not just domestic savings and foreign exchange but also lead to higher investment which will influence long term growth.

Also, the New Growth theories postulate that foreign direct investment provides comparative advantage for economies with relatively scarce capital (low domestic savings) to bridge the gap between savings-investment as well as foreign exchange in order to converge with wealthy economies in the long run (Romer, 1986). These capital flows has over the years contributed significantly to the economic growth of countries, especially developing countries (Rostow, 1963).

Many developing countries have experienced the influx of multinational companies into their countries, and this has helped promote growth in diverse ways such as transfer of technology and managerial skills, expansion of the domestic market, provision of skilled labor for particular



industries through training and development, and improvement in the domestic stock exchange market. Since the early 1990s, FDI flow to developing countries increased rapidly from US\$36 billion in 1990 to US\$379 billion in 2006.

According to UNCTAD (2005), the flow of FDI to developing countries increased from 5 percent in 1980 to 36 percent in 2004. This means that foreign direct investment has now become a significant source of capital for growth and development, especially in the fight against poverty. FDI increases a host country's productivity and change its comparative advantage. If productivity growth were export biased then FDI would affect both growth and exports just as it does with respect to capital formation (Blanka, 2012). FDI's effect on the growth of an economy depends on the level of technological advancement, economic stability, investment policy and degree of openness of the country (Dritsakis et. al, 2006).

Funding for official development assistance has been growing substantially with net ODA disbursement reaching US\$ 105 billion (at constant 2004 prices) in 2005 (IDA, 2007). A larger portion of the disbursement, according to IDA (2007), has been allocated to debt relief (which accounted for almost 70 percent of ODA disbursement between 2004 and 2005), and this has helped in the fight against abject poverty, especially, in sub-Saharan Africa.

The effect of official development assistance on economic growth is seen via increase in public investment spending, control of diseases and poverty alleviation (Durberry, Gemmell and Greenaway, 1998; Osei et al., 2005; Morrissey, 2012).

In Ghana, financing economic growth has been an important objective of government since independence. It is required of the government to embark on large expenditures in order to

improve the human capital, the domestic market, technology and other social and economic activities to boost the economy. If the government's budget is insufficient to cater for all these, an outside financial muscle is needed for growth.

Empirically, different macroeconomic variables have been used and tested in order to ascertain their true effect on economic growth. Most of these works by authors such as De Gregorio (1992), Blomstrom et al. (1994), Borenstein et al. (1998) and Bezuidenhout (2009), affirm that foreign direct investment plays a major role in the growth of developing countries while Feder (1982), Durbary, Gemmell and Greenaway (1998) and Lloyed et al. (2001) also provide evidence in support of the growth-effect of official development assistance. However, most of these works do not consider the combined effect of each of these variables on economic growth of a country.

Meanwhile, there are other important macroeconomic variables that affect economic growth. Since ensuring sustainable growth and development is the major policy indication of any government in the world, growth in the gross fixed capital formation; which is one of the prime factors that determine economic growth (Dritsakis et al., 2006). Pavelescu (2008) also iterated that gross capital formation's contribution to growth is not only on the demand side but also on the supply side.

The effect of a poorly managed exchange rate on an economy is enormous. It disrupts household planning as well as firm's budgetary allocations, especially in an import-dependent economy like Ghana. The continuous increase in the cost of imported goods, especially inputs of production, affects productivity adversely and decrease economic growth.

Also, exchange rate volatility has been a major issue in Ghana due to the continuous fall of the Cedi against the major trading currencies (Tsikata et al., 2015), hence the need to consider it in growth models.

In 2013, official development assistance inflow to sub-Saharan Africa was US\$46.014 billion, while that of South America and Middle East were US\$3.924 billion and US\$16.904 billion respectively. Meanwhile, foreign direct investment flows to sub-Saharan Africa amounted to US\$42 billion while South America and the South-East Asia were US\$133 billion and US\$127 billion (UNCTAD, 2015). However, since the early part of the 21<sup>st</sup> Century, FDI has seen rapid growth while ODA has seen a marginally slow increase since the mid-1940s.

## **1.2 Brief Country Profile**

Over the years, sub-Saharan Africa has been associated with incidence of diseases, regional instability, civil wars, environmental degradation etc. due to poverty and corruption. Stagnant growth and economic hardship have encouraged migration of the indigenous people to developed countries in search of greener pastures and better living conditions. Meanwhile, poverty and inequality can be a catalyst for terrorism, money laundering, drug and child trafficking, child labor among others.

The developed world is greatly affected by these happenings and provides enough justification to help the less developed ones. It is against this background that the Pearson Commission in 1969 urged all industrialized countries to make provision of 0.7 percent of their gross national income (GNI) as Official Development Assistance (ODA); which plays a very significant role in the growth of developing economies (Hynes and Scott, 2013).

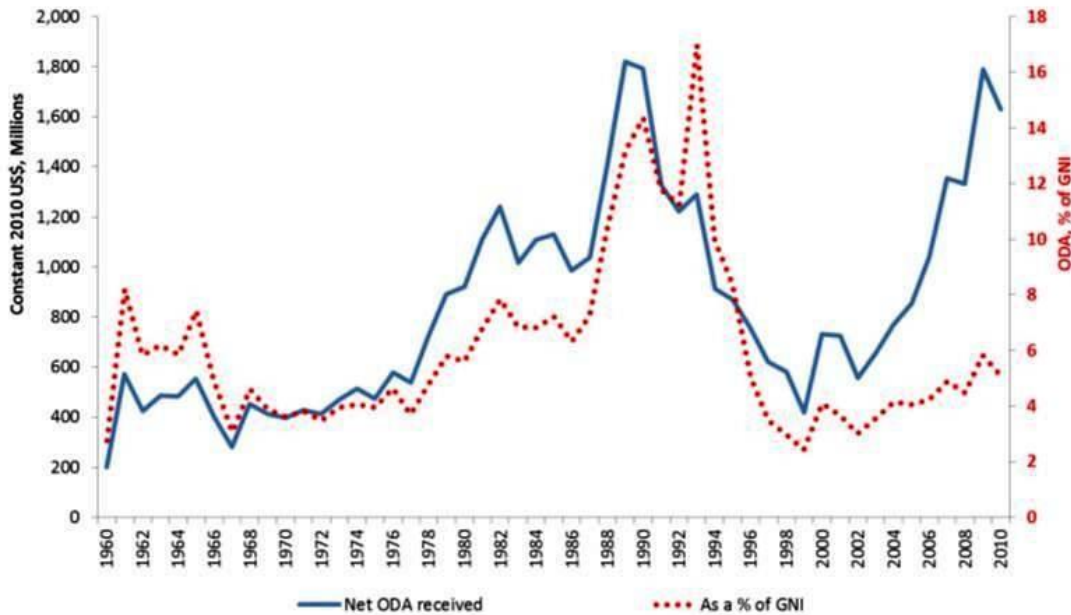
Lahdhiri and Hammas (2012) also stated that ODA, FDI and remittances are the preferred sources of funding for achieving the Millennium Development Goals (MDGs) by the International Financial Institutions (IFIs). They believe that these external flows will help eliminate abject poverty and promote growth and development in developing countries.

Development assistance comes in many forms ranging from social infrastructure, economic infrastructure, production, program assistance and multi-sector support. —The true test of aid effectiveness is improvements in people's lives; OECD (2007). Development aid flows has over the years contributed significantly towards the fight against abject poverty especially in subSaharan Africa. The improvement in the lives of a particular people has over the years been seen as one of the major solutions to terrorism, corruption and civil wars. Dangerous diseases like HIV/AIDS, measles, tetanus and the recent Ebola outbreak have been minimized, especially in sub-Saharan Africa, through aid. Recently, the International Development Association of the World Bank's fund have mobilized US\$ 1.17 billion to support the most Ebola affected countries (Guinea, Liberia and Sierra Leone); World Bank (2015). These flows have contributed immensely towards world peace, hunger, tranquility and disease control.

In figure 1.1 below, there is a general oscillating trend of official development assistance (percentage of gross national income) to developing countries which peaked in 1993. Net ODA also depicts an oscillating trend which recorded its highest in 1989.



**Figure 1.1: Net Official Development Assistance to Developing Countries**



**Source: World Bank (2013)**

One of the fundamental economic problems of developing countries is insufficient funds to finance investments (Agiomirgianakis *et al.*, 2006). Savings rate in these countries are very low, and makes it very difficult for governments in these countries to access funds domestically to improve infrastructure, reduce poverty rates and sustain economic growth. Therefore, they are always in constant need of foreign capital.

Initially, governments of developing countries, especially sub-Saharan Africa, took loans from commercial banks until the drying-up of commercial bank lending brought about the need for reform in their investment policies in the 1980s (Carkovic and Levine, 2002). This brought about the birth of foreign direct investment; which appeared to be the easiest and most economically convenient and less stressful way to acquire external capital to fund investments and boost economic growth in these economies. Thus, FDI is seen as the best alternative to market loans.



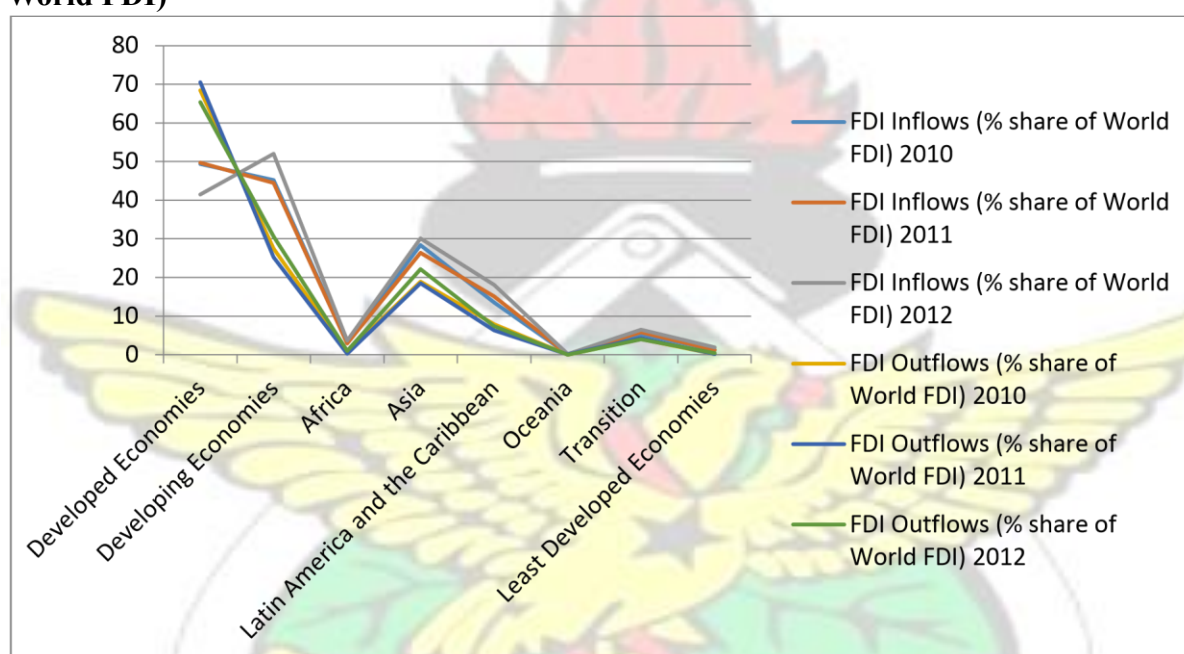
About half a century ago, it was not possible for one to acquire any property from another country without his/her physical presence but globalization has made it possible for one to sit in the comfort of his/her home and order for any material or even acquire any property of his/her choice without been physically present at the location of the object. Foreign direct investment evolved through globalization. However, Asafu-Adjaye (2005) iterated this assertion by adding that FDI has been given much attention recently not only due to the globalized nature of the 21<sup>st</sup> century but also as a consequence of the steady decline in official development assistance.

At the micro level, FDI is one of the major approaches that businesses use to enter a foreign market. The flow of foreign direct investment to developing countries recorded its second highest level though there was a slight decline by 4 percent to US\$ 703 billion in 2012 and has proven to be much more resilient than flows to developed countries (UNCTAD, 2013). Developing countries share of FDI amounted to 52 percent of FDI inflows globally, exceeding flows to developed countries by US\$ 142 billion for the first time ever.

According to UNCTAD World Investment Report (2013), the global rankings of the largest FDI recipients show that 9 out of 20 largest recipients were developing countries. At the regional level, flows to developing Latin America and Asia seem to be sustainably high though their growth level weakened. There is a year-on-year increase in FDI inflows to Africa in 2012 as depicted in figure 1.2 below. Foreign direct investment outflows from developing economies recorded an amount of US\$ 426 billion, representing 31 percent of the world total, while outflows from Africa tripled. Brazil, the Russian Federation, India, China and South Africa

(affectionately called the BRICS by UNCTAD) were the top emerging economies who have continuously been the leading source of foreign direct investment globally. FDI flows from the BRICS increased from US\$ 7 billion in 2000 to US\$ 145 billion in 2012, representing ten percent of world total. The United States was the largest investor followed by Japan and China; in third place (who moved up from sixth position).

**Figure 1.2: Foreign Direct Investment flows by Region from 2010 to 2012 (% share of World FDI)**



**Source: UNCTAD (2013)**

However, the World Investment Report (2015) stated that global FDI fell by 16 percent to US\$ 1.23 trillion in 2014. As the inflows to developed countries fell by 28 percent (with an amount of US\$ 499 billion), the inflows to developing countries, however, reached the highest record ever with an amount of US\$ 681 billion, representing a 2 percent increase. Foreign direct investment flows are projected to grow by 11 percent to US\$ 1.4 trillion by the end of 2015, US\$ 1.5 trillion in 2016 and US\$ 1.7 trillion in 2017.

### 1.2.1 Trends in Economic Growth of Ghana

The Ghanaian economy has over the past two decades been strengthened by relatively sound management, a competitive business environment, political stability and a curb of abject poverty (Okudjeto et al., 2015). In the latter part of 2010, the country was re-categorized as a lower middle-income country.

However, the economy of Ghana experienced very challenging moments especially between 1970 and 1983 where real GDP at market prices fell by 11 percent while per capita income recorded more than 11 percent fall, and did not recover until 1985 (Toye, 1991).

Though the economy of Ghana has had its challenging moments, in recent years, the economy has had a commendable growth trajectory, especially in the first quarter of 2006 where the country recorded US\$ 1.46 billion in remittances, 9.5 percent inflation rate, a 31 percent increase in exports, and base rate down to 20 percent. The gross international reserve position of the Bank of Ghana recorded a year-on-year rise of 24.2 percent (thus, US\$ 1.91 billion), representing an import cover for 3.8 months (Osei, 2012). This is by far the longest sustained economic revival in the history of the Ghanaian economy since independence.

Official development assistance inflows have played a very vital role in the recovery and boost of the Ghanaian economy since the 1980s through policy reforms and the perceived ‘conditionalities’ attached to these flows which makes governments responsible and accountable in their spending (Leechor, 1994).



In 2014, the country's gross domestic product expanded by 4.2 percent (GSS, 2015). However, this represents a reduction in the economy's growth since 7.3 percent growth was recorded in the previous year. Meanwhile, the Ghanaian economy is expected to recover and register a fair expansion in productivity by an increase in oil and gas production, private investment (both local and foreign sector) and improved infrastructure.

Recently, Ghana's economy has been on a decline for three consecutive years and Okudzeto et al (2015) predicts a further decline for the fourth consecutive year due to the continuous deteriorated energy situation, indiscriminate borrowing which has led to large public debt and crowding out of private investment, and deteriorated macroeconomic and financial imbalances.

The debt level of the country climbed up to 67.1 percent of gross domestic product in December 2014. This abysmal performance of the economy resulted in the country being ranked 70<sup>th</sup> out of 189 countries in Doing Business 2015 by the World Bank.

### **1.2.1 Official Development Assistance flows to Ghana**

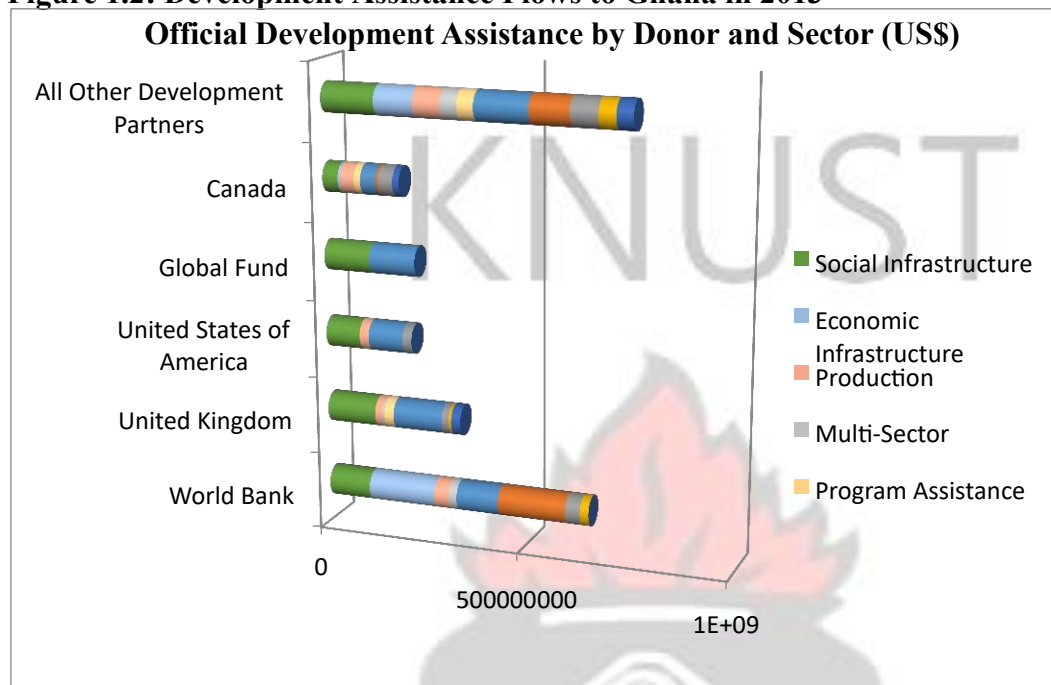
Observantly, political stability, proper economic management and strong institutions have been the major motivation factors that drive external capital flows to an economy. Development assistance flows tend to be quite minimal in countries that have experienced many coup d'états compared to the more politically stable ones (Rose and Wiebe, 2015). Ghana has experienced a fairly stable political climate over the years, and this has accounted for a substantial increase in development assistance from its development partners. According to Aryeetey and Tarp (2000), Ghana's growth in the 1980s was 'largely a consequence of increased aid inflows' as compared to the low level of development assistance in the 1970s; a period of economic mismanagement.

In 1972, the decision to default on all external loans by the then military government was a disincentive to development assistance flows into the country. The country enjoyed a rise in development assistance for two consecutive years after holding a democratic election in 1979. However, the 1981 coup d'état seemed to cast a rather shrewd future for the country's development assistance flows but had a sustained increase in development aid flows from 1985 due to implementation of sound economic reforms and the perceived commitment by the government to better manage the Ghanaian economy. Development assistance to Ghana increased by almost by 300 percent from US\$ 150.7 million to US\$ 450.8 million in 1995 (Tsikata, 1999). The adoption of multi-party democracy in the early 1990s helped increase ODA flows into the country, especially program assistance.

In Ghana, the International Development Association (IDA), World Bank's fund for the poorest contributes the highest share of development assistance flows into the country. It contributes US\$ 104 million to social infrastructure, US\$ 166 million to economic infrastructure, US\$ 36 million to production and US\$ 21 million to multi-sector development. The UK, United States of America, Global fund and Canada are the other major contributors of development aid flows in the country. Germany, France, Switzerland, Denmark, Japan, Netherlands, Belgium, Korea, Italy and EU institutions (whose contributions are summed up as all other development partners) also form a significant part of ODA flows to Ghana, as depicted in the figure below.



**Figure 1.2: Development Assistance Flows to Ghana in 2013**



**Source: OECD (2014)**

### 1.2.1.1 The Fiscal Response Effect of Official Development Assistance

To realize the effectiveness of development assistance in Ghana, it is very important to examine how ODA affects public spending (fiscal behaviour).

The literature on the fiscal impacts of ODA generally show that it increases public spending as well as contributes to welfare and development (Osei et al., 2005). However, different approaches have been used to ascertain the impact of ODA on fiscal variables, and these approaches can be divided into two categories. The fungibility studies which concentrates on whether development assistance is spent on those sectors for which it was intended, such as health and education is one of them. The second approach, the fiscal response studies; go beyond issues of fungibility by including the effects of ODA on fiscal aggregates such as total public spending, public investment spending (development expenditure), public consumption spending (recurrent expenditure), tax revenue and domestic borrowing.

The fiscal response studies examines the effect of ODA on government fiscal behaviour in a dynamic framework in contrast to the fungibility studies which concentrates on static effects (Fagernas and Schurich, 2004).

Official development assistance inflows to Ghana during the 1960s and 70s accounted for about 12 percent of government revenue and 2 percent of GDP while no evidence of conditionality clauses in the use of the donor-support funds is found (Osei et al., 2005).

The country recorded very minor differences in fiscal behaviour until the early 1970s when the then government instituted a laissez-faire approach to development (Frimpong-Ansah, 1991; Rimmer, 1992). However, it is very unlikely that ODA inflows had any significant impact on fiscal behaviour before mid-1980s (Osei et al., 2005).

Successive governments relied heavily on the country's significant reserves and cocoa revenue during the 1970s, and this made them irresponsive to external pressures until the country's reserve depleted alongside a collapsing cocoa sector. This resulted in economic liberalization through the adoption and adherence to the Economic Recovery Program/Structural Adjustment Program (ERP/SAP) in the 1980s.

Also, the country recorded persistent fiscal deficits (public expenditures exceeded revenue) prior to 1983 since the country depended heavily on domestic sources of revenue relative to development assistance inflows (Osei et al., 2005). In 1976, the country's fiscal deficit had grown large that it amounted to 11 percent of GDP. The government financed these deficits by printing money (seignorage) and through domestic borrowing. However, the country's fiscal deficit

contracted after 1983 and even recorded fiscal surplus during the late 1980s due to large inflows of development assistance (Addison and Osei, 2001).

### **1.2.2 Foreign Direct Investment flows to Ghana**

Within the last two decades in the fourth republic, various governments have sought different measures to attract foreign direct investment into the country. The inflows of official development assistance which was the major contributor to financing growth in the Ghanaian economy was unstable and therefore there was the need to look for alternative ways to alleviate poverty and boost economic growth in the country.

Successive governments within the fourth republic ensured that there is an investment friendly environment alongside macroeconomic stability, favorable taxation policies (which includes tax holidays and import duty exemptions for foreign investors) and improvement in infrastructure in order to attract foreign direct investment into the country (Asafu-Adjaye, 2005). Also, the passing of the historic Bank of Ghana Act 612 by Ghana's Parliament in 2002 has given the central bank of the country constitutional powers to conduct monetary policy independently and devoid of political interference. The core mandate of the Bank of Ghana is to maintain price stability, sustain economic growth, and supervise and regulate the activities of all financial institutions in the country, thereby assuring that the security of investments in the country is safe and not left in the hands of politicians. Other policies such as the Investment Promotion Protection Agreements and Multilateral Investment Guarantee have all been implemented to protect investments in the Ghanaian economy. All these policies have helped attract substantial

FDI inflows to the country (Asafu-Adjaye, 2005).

FDI inflow to Ghana over the past eight years fluctuated between \$144 million in 2005 and \$3 billion in 2012. In 2013, Ghana saw a slight reduction in FDI from \$3,293,430,000 in 2012 to

\$3,226,300,000. Within the same year, FDI's flow to Ghana (percentage of GDP) was 6.7 percent.

The country has seen a significant contribution of FDI to its GDP over the past 38 years, recording its highest value of 9.52 percent in 2008 and its lowest value of -0.66 percent in 1976; IMF (2015).

Table 1.1 below depicts the level of FDI in the Ghanaian economy over the past three years. The stock of FDI (in millions of US Dollars) as well as FDI inflows' contribution to the gross fixed capital formation of the country has seen a growth trajectory over this period. The most recognizable growth is the stock of FDI's share of GDP. There is a substantial growth pattern from 2012 to 2014.

**Table 1.1: Quantum of Foreign Direct Investment in Ghana**

<b>Foreign Direct Investment</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>
FDI Inward Flow (million US\$)	3,293	3,226	3,357
FDI Stock (million US\$)	16,621.8	19,848.1	23,205.1
Number of Greenfield Investments	43.0	58.0	39.0
FDI Inwards (% of Gross Fixed Capital Formation)	25.3	29.6	36.1
FDI Stock (% of GDP)	39.6	40.9	60.0

**Source: UNCTAD (2015)**

However, the recent energy crisis in the country has increase the cost of doing business, which has prompt social commentators and bookmakers to speculate a fall in foreign direct investment inflow by the end of 2015 due to the severe nature of the energy crisis this year.



### 1.3 Statement of the Problem

External capital flows constitute a major source of funds for developmental projects in Ghana (Ministry of Finance and Economic Planning, 2015). These concessional loans/grants (ODA) as well as FDI have contributed significantly to the country's agriculture, education, health etc. over the years. Ghana has been able to attract FDI into the country through improvements in infrastructure, human capital etc. which was made possible by the development assistance received throughout the years. However, development assistance seems to be declining and has therefore proven inadequate in financing the growth of the Ghanaian economy; hence the need to investigate the effects of ODA and FDI on the productive capacity of the country as well as examine the fiscal response effect of ODA inflows on public spending, if any.

In recent empirical works such as MacGillivray and Morrissey (2001), Chatterjee et al. (2012) and Morrissey (2012), economists expect ODA flows to be fungible and also have significant positive impact on the growth of an economy since most of the inflows supports government expenditure and indirectly reduces taxes in the domestic economy. However, not much studies have been conducted, especially for Ghana.

Also, the growth-effect of official development assistance has come under severe criticism over the past two decades, especially, in developing countries. Many analysts argue that corruption, stagnant growth, economic mismanagement and aid over-dependency have been the result of development assistance in developing countries (Bauer, 1991). There is the notion that



development aid to developing countries has rather been counterproductive and has failed to achieve any developmental agenda that it was intended for (Bauer, 1991; Bandow and Vásquez, 1994; Easterly, 2006). However, other authors such as Burke and Ahmadi-Esfahani (2006) and Bhandari et al. (2007) provide strong empirical evidence in support of the linkage between foreign aid and productivity levels. They found that development aid has a significant impact on the productivity level and growth.

Furthermore, foreign direct investment has been questioned about its true effect on recipient/host countries. Authors such as Hymer (1970) and Eden (2009) stated coherently that there are potentially negative social effects of foreign direct investment. Meanwhile, Balasubramanyam et al (1996) and Olofsdotter (1998) also found positive effects of FDI on economic growth whiles De Mello (1999) found weak indications of a positive relationship between FDI and economic growth for a sample of 32 developed and developing countries.

According to Asiedu (2004) and Bezuidenhout (2009), sub-Saharan Africa requires a capital amount of US\$ 64 billion annually so as to generate a growth rate of 7 percent annually to meet the requirement of the Millennium Development goals. However, sub-Saharan Africa has not been able to attract and sustain sufficient capital flows from abroad. The reason for this, according to Asiedu (2006), Krugell and Naudie (2007), is due to the high-risk environment for private investment. The inability to attract sufficient investments coupled with the declining trends in development assistance raises concerns about the strength and ability of the continent in poverty alleviation as well as achieving sustainable growth and development.

#### 1.4 Research Objective

The main objective of this study is to examine the effect of official development assistance and foreign direct investment on economic growth in Ghana.

Specifically, the study seeks to;

- i. Examine the long run effects of ODA and FDI on economic growth
- ii. Estimate the fiscal response effect of ODA to categories of public spending (total public spending, public consumption and investment spending) in Ghana.

#### 1.5 Research Hypothesis

The study seeks to test and validate the following theoretical hypothesis;

1)  $H_0$ : There is no long run effect of FDI and ODA on economic growth  $H_1$ : There is a long run effect of FDI and ODA on economic growth

2)  $H_0$ : There is no fiscal response effect of ODA to categories of public spending in Ghana

$H_1$ : There is a fiscal response effect of ODA to categories of public spending in Ghana

#### 1.6 Justification of the Study

Though there have been many empirical studies on the effect of these external inflows, there is a strong criticism of these studies since most of the studies conducted at the macro level yielded ambiguous results, especially the growth effect of ODA, while micro level analysis found aid effectiveness in most countries (Cassen et al., 1986; Mosley, 1987). This conflict was referred to by Mosley (1987) as the micro-macro paradox.

The macroeconomic effect of FDI on growth must be re-examined since existing studies looked mostly at cross-sectional data or panel data analysis using short time period and the routine use of lagged dependent variables in growth regressions instead of the country-specific effects. Therefore, there is the need to empirically examine the country-specific effect of FDI and ODA on growth with econometric procedures that eliminate these shortcomings.

This study adds to existing studies by using robust models to examine the growth effects of ODA and FDI as well as employ lengthier and most current data period for its analysis.

Also, not much research has been conducted to specifically investigate the combined effect of FDI and ODA on economic growth for Ghana.

Furthermore, the comparative effect of ODA and FDI on economic growth appears not to be well researched especially for one-country situation. Authors such as Vitalis (2001), Colen and Swinnen (2012), Easterly (2006), Edison, Riccia and Sloka (2002), Dustmann and Kirchamp (2001), and Benmamoun and Lehnert (2013); who investigated the ODA, FDI and remittances effect on growth using varying panel data of developing countries, concentrated on either a pool of lower income and lower middle-income countries or developed and developing countries. Osei (2012) came close with his work on the aid-private capital flows-growth nexus for Ghana with particular attention given to the argument that Ghana's new status as a middle income country plus the start of oil production is bound to result in a reduction in ODA inflows in the long term. However, his analysis failed to show the fiscal response effect of ODA on public spending in Ghana.

Therefore, it is imperative for an extensive work to be conducted on the role that these external capital flows (FDI and ODA) play in the Ghanaian economy as well as how the various categories of public spending are affected by ODA inflows to Ghana.

Examining the fiscal response effect of ODA in Ghana is very important since ODA inflows have fiscal response effect on government expenditure and the long term growth of an economy (Mavrotas, 2002; Morrissey, 2012). Mavrotas (2002) further stated that the significance of ODA fiscal response studies is that it helps reveal the true growth-effect of ODA in recipient countries. The study will also shed light on the long run determinants of economic growth in Ghana and provide policy implications for effective implementation of sustainable growth policies in the country.

### **1.7 Scope of the Study**

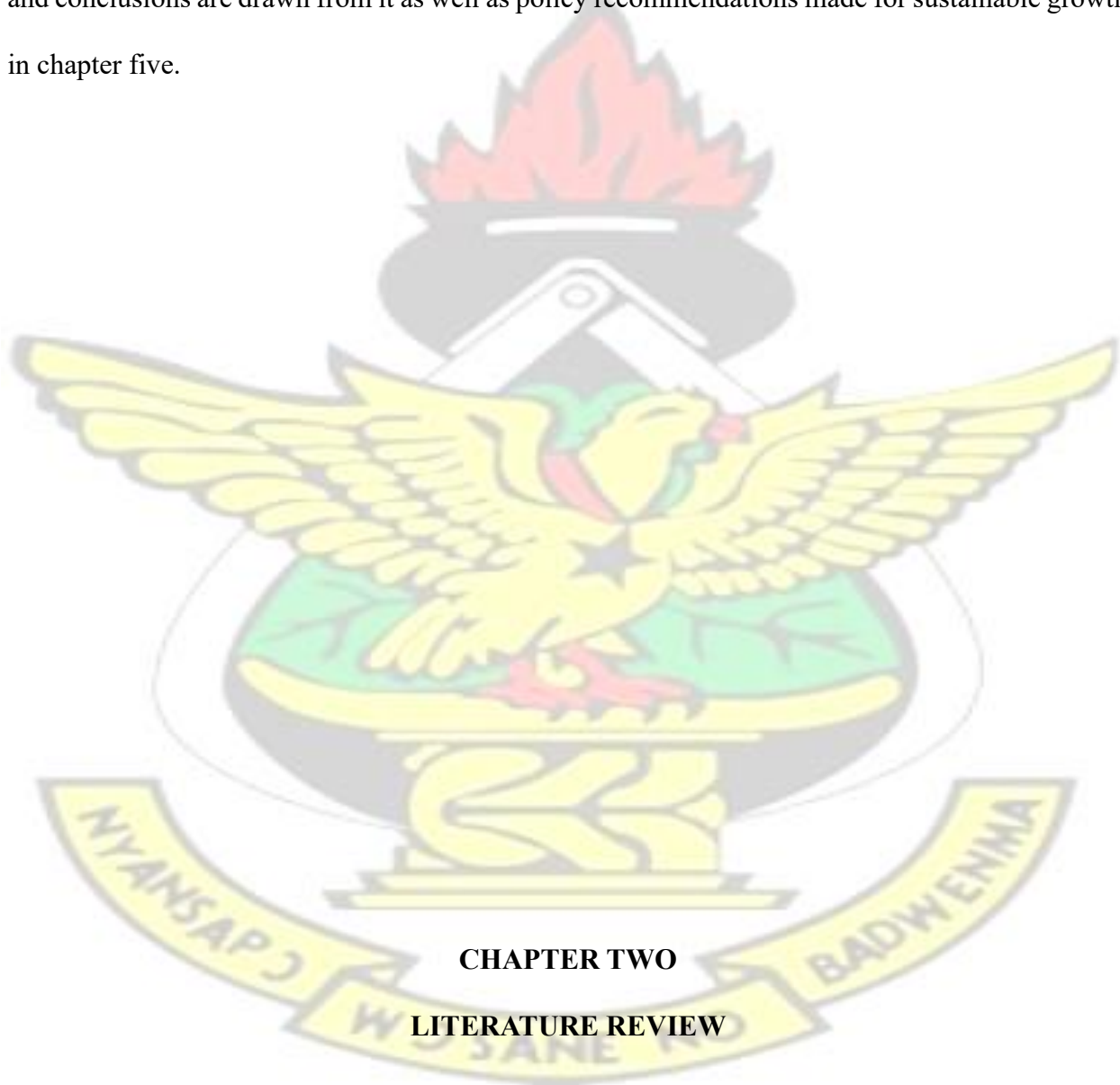
The study covered the analysis of the effect of ODA and FDI on economic growth in Ghana. And to achieve this objective a data span covering the period 1975 to 2014 was used while the data used in estimating the fiscal response of ODA spans from 1980 to 2014 due to unavailability of data for most of the variables for the period. The choice of the study period was primarily dependent on data availability on most of the variables used in the study as well as time and resource constraint.

### **1.8 Organization of the Study**

This study was organized into five (5) chapters. Chapter one is introduction, and covers the background of the Study, statement of the problem, objectives of the study, research hypothesis,



justification of the study, methodology, scope and organization of the study. Chapter two covers literature review and contains a description as well as an analysis of related literature, theoretical and empirical, to the study. Chapter three covers the methodology used in the study. It details the data collection procedure, method of analysis and the processes used for conducting the study. Chapter four covers data analysis and findings. The results of the data analysis are summarized and conclusions are drawn from it as well as policy recommendations made for sustainable growth in chapter five.



## **CHAPTER TWO**

### **LITERATURE REVIEW**

## **2.1 Introduction**

This chapter outlines the theoretical literature on foreign direct investment, official development assistance and economic growth in Ghana. Empirical evidence on the relationship between FDI, ODA and economic growth was also reviewed and reported. Lastly, the methodology used in literature on the relationship was also reviewed and presented.

## **2.2 Theoretical Review**

Economic growth models postulate that the main factors that account for sustainable growth and development are capital, effective labour and technological progress. Since there is low rate of domestic savings in developing countries accompanied with current account deficit which restricts them from importing capital goods for investment, official development assistance is said to be the tool that resolve this issue and increase growth in these countries.

According to OECD (1985), the Marshall Plan (an economic recovery program for Europe during the post-World War II) that saw a transfer of US\$13.2 billion from the United States to Europe during the period 1948 to 1952 helped spur economic recovery in Europe. Similarly, developing economies need external capital inflows in order to sustain the growth of their economies, ensure the eradication of poverty and achieve economic development, in their first stage of development (Rostow, 1963).

In the two-gap theory developed by Chenery and Strout (1966), developing countries can bridge the gap between savings (the savings gap) and foreign exchange (the foreign exchange gap) through development assistance inflows. Thus, ODA inflows to these countries will help

supplement not just domestic savings and foreign exchange but also lead to higher investment which will influence long term growth.

In countries where capital is scarce, the Neo-classical growth theories predict that foreign direct investment increases the volume and efficiency of physical investment thereby promoting economic growth (Romer, 1986; Lucas, 1988; Grosman and Helpman, 1991; Baro and Sala-i-Martin, 1995 and Adhikary, 2011). Thus, through FDI, the recipient country is endowed with capital and technological know-how which helps increase productivity and affects economic growth positively.

### **2.2.1 Theories of Growth**

Economic growth is the mostly used measure of economic well-being of a country. Economists have studied this important area from the era of Adam Smith.

In the theory of production, certain stocks of production factors are needed in order to produce a particular level of output. For growth in output to be realized, these stocks of production have to be increased. However, to analyze fully the theory of growth, there are two important questions that need to be answered (Romer, 1996). The first question is why the stocks of inputs vary over time across different countries and in different ways. The Classical theories assume that the growth rate of inputs of production such as land and labour are exogenously determined while other factors such as capital is determined by savings behavior whilst the determination of technological progress has mixed results since earlier theories assumed it to be exogenously determined while new growth theories assume it to be endogenously determined.

The second question is about how the factors of production can be fully utilized. The Classical and Neo-classical theorists argued that the stock of the input factors only determine a country's

productive capacity but the volume of output is determined by the level of utilization of the productive capacity and is dependent on the significant role of demand.

However, the role of demand is neglected because of the underlying notion that supply creates its own demand (Say's Law). This underlying notion stems from the belief that markets are efficient and competitive enough to adjust prices of all inputs to equilibrium level where supply equals demand. In the labour market wages adjust to changes in the labour force and result in full employment while savings equals investment in the capital market as a result of adjustment in interest rates. Here, all factors of production are fully utilized.

The Classicists and Neo-classicists believe that the market forces of demand and supply allocate resources optimally at any particular period and that the gross domestic product of an economy is the maximum level that can be attained given that country's factor endowment (Romer, 1996). Thus, the growth of national income is accounted for using only supply factors while demand factors are given relevance only in resource allocation and the growth in output.

There are many classical theories of growth but this study will review the ones in aggregation. Adam Smith iterated that an improvement and increase in labor inputs leads to rise in productivity and economic growth. David Ricardo further elaborated this concept by developing the theory of comparative advantage; where there is the need for countries to specialize. That is, a country should focus on producing a good which it has comparative advantage in (where they produce the good with minimal cost). The Heckscher-Ohlin (H-O) model re-emphasized this hypothesis by recommending that countries should utilize the factor input that they are endowed with and focus on producing goods which require that particular input the most. For example, if Ghana is endowed



with labor, the H-O model recommends the production of labor-intensive goods in order to achieve comparative advantage.

The Ricardian model of growth, which is popularly known as the Magnificent Dynamics, focuses on the agricultural sector and asserts that land and labour are the two main factors of production. Here, land is assumed to be fixed in supply but has a varying quality depending on the location. Labour on the other hand is assumed to be fully employed and paid wage for its use. The perfect competitive market (in a capitalist economy) ensures that labour equals its marginal productivity when allocated to different farms. Therefore, if the marginal productivity of labour in farm 1 is lower than that of farm 2, labour is shifted to farm 1 which then results in a rise in marginal productivity of labour in farm 1 while the marginal product of labour in farm 2 falls until the two becomes equal due to the law of diminishing returns. The main critique of the classical theory of growth is that most of the theories were developed as advocacy of capitalism and free trade with focus on the policy of specializing in the production of goods in which a country has comparative advantage in and exchanging them for goods from other countries, which was believed to slow down the movement towards the stationary state. Also, the classical hypothesis about demographic behavior is quite controversial since it was developed based on the linkage between the living standard of workers and subsistence level. However, the concept of subsistence level was ambiguous

The Harrod-Domar model offers a slightly different mechanism for growth to be achieved. The model states that the growth rate of a country can be enhanced only if the savings rate and capital-output ratio are increased consistently. That is, the quantum of savings in an economy must grow alongside investment in productivity of the country. The model further states that there is the need

for an economy to bridge the gap between investment and savings (financing gap) in order to achieve economic growth. However, developing countries from time immemorial have failed to bridge the financing gap, hence the need for external capital flows (ODA and FDI). Though the model has received several criticisms, it is still widely used (particularly, by the World Bank and IMF) to measure external resource requirements in development assistance allocation.

Solow (1956) also contributed to economic growth theory by introducing technological change as the most important determinant of growth. He expanded the Harrod (1939) and Domar (1946) model of fixed proportions in input-factors into a new theory with savings and investments playing a role in achieving growth but with technological change as the most important determinant of growth. He further indicated that focus must be on the impact of policies on technological change and that developing countries should focus on diffusing knowledge from developed countries since the only thing that separates developed from developing countries is the gap in knowledge and resources (Stiglitz, 2012). This shows the importance of learning (technological progress) to the growth of an economy.

Neo-classical growth theories predict capital to be the main engine of growth. These theories assume capital accumulation to be the key element and that for an economy to achieve long term growth, capital must increase in order to promote higher productivity and efficiency. Therefore, in order for countries (especially less developed ones) to achieve long term growth, national savings

must be raised in order to increase the capital stock thereby raising productivity levels and improve living standards.

The New growth theories also postulate the significance of rise in investments and the development of both human and physical capital in achieving economic growth in the long run. Therefore, policies must be enacted to focus on investment efficiency and the level of growth. According to Barro (1996), growth theory consists mainly of the Neo-classical model developed by Ramsey (1928), Solow, Swan (1956), and Cass, Koopmans (1965). He further elaborate that the feature of the model that has been empirically considered the most in recent times is the convergence property. He emphasized that the lower the starting level of real gross domestic product per capita, the higher the predicted growth rate and that absolute convergence would be attained if all economies were intrinsically identical except for their starting capital intensities. This means that poor economies would grow faster than rich economies.

Achieving long term growth is very important for the development of every economy. Endogenous growth theories that postulate technological change (discovery of new ideas and methods) in production process are very essential to achieving growth in the long term.

However, according to Barro (1996) most cross-country empirical studies on growth adopted the Neo-classical model while inculcating government policies, human capital and the diffusion of technology. Therefore, growth theories that adopt technological change are very significant in explaining per capita growth indefinitely.

### 2.2.1.1 Determinants of Economic Growth

Economic growth is determined by six major factors (Rostow, 1963), four of which are classified under one heading ‘supply factors’ and they include natural resources, human resources, capital goods and technology. The rate of economic growth is said to increase as natural resources increase in quantity and quality. An increase in the quantity and quality of human resources (both skilled and unskilled workforce) also increase the rate of growth. Here, increase in quality of human resource means improvement in the skills of the workforce. Though capital goods require a huge initial outlay, they promote higher productivity and enhance growth in the long term. Through research and development, new technologies can be invented or existing ones can be improved in order to raise productivity by fastening the processes involved in production and increase the growth rate.

The other two determinants are demand factor and efficiency factor.

Since suppliers respond to increase in demand for goods and services, it is very important that the increase in demand is sustained in order to achieve higher productivity and hence a higher rate of growth. Efficient allocation of scarce resources to produce the optimum combination of goods and services is very vital to the growth of every economy. Efficiency in production as well as resource allocation reduces cost and increase productivity and growth.

In Adam Smith’s *Wealth of Nations* published in 1776, the determinants of growth were laid bare. Lewis (1955) also evaluated the determinants of growth by outlining four principles in his book ‘The theory of Economic Growth’. He emphasized that factor accumulation, human capital, institutions and policies are the four principles of growth and that efficiency (effort to economize), the attainment and application of increase in knowledge and increase in amount of capital per head



as well as other resources are the proximate causes of growth. Bhalla (2007b) summarized this by saying that growth in the modern era is about growing the total factor productivity, that is, increasing the application of both human and physical factors and obtaining an extra yield from these factors. He further stated that the importance of particular growth determinants is quantified using an impact coefficient. This coefficient is computed as an additional variable in the basic growth model which was propounded by Barro and Sala-i-Martin (1992).

Recently, the determinants of economic growth have been much researched. Traditional models such as the Neoclassical, based on Solow's growth model, have emphasized the importance of investment while endogenous growth theory developed by Romer (1986) and Lucas (1988) has focused on the role of human capital and innovation capacity. Numerous empirical studies have been conducted to either support or disain these theories. Because of the lack of a unified theory on growth, these empirical studies have multi-theoretical bases.

Foreign direct investment (a major determinant of growth especially in developing countries) impact on economic growth can be seen as dependent on the level of technological advancement of a host economy, economic stability, the state's investment policy and the degree of openness (Rittenberg and Tregarthen, 2012). FDI increases a host country's productivity and change its comparative advantage. If productivity growth were export biased then FDI would affect both growth and exports just as it does with respect to capital formation (Blanka, 2012). FDI's effect on the growth of an economy depends on the level of technological advancement, economic stability, investment policy and degree of openness of the country (Dritsakis et. al, 2006). They further argue that FDI inflows can also affect capital formation because they are a source of financing whiles capital formation also serves as a determinant of economic growth.

Ensuring sustainable growth and development is the major policy indication of any government in the world. This is because sustainable growth ensures that the needs of the present generation are met while securing that of the future generation and capital formation is seen as one of the major contributing factors towards growth and development of a country. Dritsakis et al. (2006) affirms this notion by stating that gross capital formation is one of the prime factors that determine economic growth. Pavelescu (2008) also iterated that gross capital formation's contribution to growth is not only on the demand side but also on the supply side. He attributed this notion to the fact that a significant portion of these expenditures are channeled towards renewing the fixed assets of firms in an economy. The author further argued that since fixed capital is a major factor in production, there is a need to quantify its efficiency, and therefore derived a formula from the Domar growth model to quantify capital accumulation efficiency.

Investment in infrastructural development by the government serve as complementary to private investment and therefore increases the marginal product of private capital which enhances the growth of the domestic economy. According to Knight, Loyaza and Villanueva (1993), Nelson and Singh (1994) public investments in infrastructure have a significant positive effect on economic growth. However, Khan and Kumar (1997) postulate that the effect of private and public investment on growth significantly differs since private investment tend to be more productive than public investment. The effect of a poorly managed exchange rate on an economy is enormous. It disrupts household planning as well as firm's budgetary allocations, especially in an import-dependent economy like Ghana. The continuous increase in the cost of imported goods, especially inputs of production, affects productivity adversely and decrease economic growth.

Also, exchange rate volatility has been a major issue in Ghana due to the continuous fall of the Cedi against the major trading currencies (Tsikata et al., 2015). Theoretically, there exists no unambiguity about the growth-effect of exchange rate. Exchange rate affects growth through the channels of investment, trade and productivity (Petreski, 2009).

### **2.2.2 Theories of Official Development Assistance (Aid)**

Official development assistance gained prominence from the post-World War II when the Marshall Plan was instituted by the United States of America to help Europe recover from its economic depression. Though the Marshall Plan was instrumental in reviving the European economies, Third World countries benefitted immensely from it since it marked the beginning of development assistance to Africa, Asia and Latin America via the Point Four Program of 1949 (Olssen and Webb, (1977); Hoadley, 1977).

The Point Four Program which came at the authoritative request of Truman led to the channeling of ODA to lower income countries. Currently, the Development Assistance Committee (DAC) of the Organization of Economic Cooperation and Development (OECD) administer different development assistance programs to developing countries and this started in the 1980s.

The effectiveness of official development assistance is explained by three main theories; the Realists, Idealists and Marxism.

The Realists paradigm postulates that development assistance is driven by strategic interest with emphases on national security and economic power. Under this paradigm, ODA flows are not aimed principally at the humanitarian or developmental needs of the recipient country but the desire of the donor country to have political influence. However, there are two schools of thought



under the Realists paradigm. The Classical or pure realists posit that ODA flows are purely motivated not by rich countries striving for the ideal development of poor countries but by the political/military strategic importance of these poor recipient countries. Morgenthau (1962) considers this as a form of bribery and an inefficient way of buying political influence.

The Neo-realists are the other school of thought, and they argue that ODA flows are motivated by a reaction to systematic features of the external state system (Waltz, 1959), and that the economic potential of recipient countries are the major objective of ODA flows. This school of thought assumes that the flow of ODA is motivated by a commercial form of national security. On the other hand, the Idealists envision ODA as a positive good in the world that has the tendency to promote economic growth and development of both recipient and donor countries. They further state that ODA has the potential of eliminating poverty from Third World countries and that it is a source of political and economic cooperation between both the donor and the recipient countries. However, there is selection bias (Rajan and Subramanian, 2005; Gourinchas and Jeanne, 2008) due to the fact that countries that have enjoyed substantial amount of development assistance flows over the years remain the poor.

The third paradigm, which is the Marxism, sees ODA as a tool for broadening the already existing economic inequality between the developed and less developed countries. Under this paradigm, economic motives based on the assumption of capitalist exploitation (of the working class) increases the influence of the elite in advanced countries, is the actual justification for ODA flows.



### **2.2.2.1 Theories on Fungibility and the Fiscal Response Effect of Official Development**

#### **Assistance**

Foreign aid or ODA is said to be fungible when the recipient country does not use it for its intended purpose (McGillivray and Morrissey, 2001). Fungibility occurs when ODA is metamorphosed into an income-augmenting resource that can be allocated in accordance with the priorities of the recipient country (Khilji and Zampelli, 1994; Sijpe, 2010), and may result from certain components of government spending since investment aid could be allocated to consumption spending. This is termed as aggregate fungibility. McGillivray and Morrissey (2004) classified aid fungibility into three main components. First, they defined fungibility in terms of the government of a recipient country diverting aid that was intended for public investment into government consumption.

Though the donor's priority is to promote infrastructural development in the recipient country, the recipient government's priority may be to pay its debts. Second, the recipient country's government may divert aid that was intended for the health sector to agricultural sector, and they termed this as sectoral fungibility. The third classification is termed as full additionality; where an assessment of whether the total public spending in the sector increased by the amount of aid.

Theoretically, aid is fungible if the government of the recipient country is seen as an optimizing agent with rational budgetary priorities that coincide with the priorities of the donor. Holmqvist (2000), however, believes that this assumption may not be strong enough since the priorities of the donor and recipient are mostly not at par and also there are many recipient countries whose budgets are aid-driven which makes the donor's priorities dictated to the recipient country. He reiterates that the budget priorities may not be rational since there is information asymmetry and continuously negotiated and reformulated priorities.

The significance of the empirical studies of fiscal response effect of ODA, in recent years, can mainly be attributed to the aid effectiveness debate. That is, the growth-effect of aid may not be fully realized if ODA inflows do not increase spending in the sectors allocated for.

McGillivray and Morrissey (2001) also state that the most significant reason why it is important to study fungibility (fiscal response effect of ODA) stems from the fact that these studies are the only types referred to in fiscal aspects of aid discussions in World Bank (1998). Thus, fiscal response effect of ODA on public spending and growth has been a very influential topic in the aid-policy debate.

### **2.2.3 Theories of Foreign Direct Investment**

Currently, the growing interest in the causes and effects of FDI has prompted numerous theories to be enacted to explain the significance or reasons why multinational corporations indulge in FDI. Romer (1986) stated that the New Growth theories postulate that foreign direct investment provides comparative advantage for economies with relatively scarce capital (low domestic savings) to bridge the gap between savings-investment as well as foreign exchange in order to converge with wealthy economies in the long run.

Foreign direct investment can be classified under three main headings.

#### **2.2.3.1 Theories that Assume Perfect Markets**

Under this theory, there are three hypotheses that explain FDI.

The differential rate of return is one of the first hypotheses used in explaining the flows of FDI.

This hypothesis assumes risk neutrality with the rate of return being the only variable upon which

investment decisions are made. Risk neutrality in this context refers to the idea that investors consider FDI to be perfect substitute to domestic investment. This hypothesis equates anticipated real rates of return of capital flows from countries with low rates of return to countries with high rates of return (Balasubramanyam et al., 1996). In testing this hypothesis, one would have to analyze the linkage between relative rates of return as well as FDI allocation among countries.

Portfolio diversification hypothesis is used to explain FDI when the differential rate of return becomes inadequate as a result of relaxing the risk neutrality property, and was developed based on reducing risk in investment. According to this hypothesis, the decision to invest in any particular security or project is not only guided by rate of return but also on risk. Due to the fear of risk (risk aversion), a differential rate of return will not stimulate capital flows in one direction until arbitraging helps eliminate the differential. Rather, the desire to minimize risk will constrain capital mobility through diversification. In testing this hypothesis, the relationship between the share of FDI flows to certain countries and the rate of return as well as risk (measured by the variance or standard deviation of rate of return) would have to be examined. Tobin (1958) and Markowitz (1959); the pioneers of the theory of portfolio selection, were the foundation on which this hypothesis was built.

The market size hypothesis is the final hypothesis under perfect markets theory that tries to explain FDI flows, and postulates that the size of a host country's market determines the volume of FDI flows to that economy. The rationale for the market size hypothesis is based on the Neoclassical domestic investment theories which assume that Multinational Corporations (MNCs) increase their investment based on the level of sales in that market or economy.

To test this hypothesis, one needs to examine whether the flow of the share of FDI from the source country to certain host countries is correlated with the host countries' individual income levels.

### **2.2.3.2 Theories that Assume Imperfect Markets**

Many authors such as Kindleberger (1969), Hymer (1976) and Martin (1991) have sought to explain the flows of FDI by looking at the structure of the market and some specific features that MNCs consider before indulging in FDI.

The industrial organization hypothesis, which was developed by Hymer (1976), was the first to explain FDI based under imperfect markets. This hypothesis postulates that since there are many disadvantages in establishing a subsidiary firm in another country, especially competing with the local firms, if an MNC engages in FDI, then there must be some advantages emanating from the firm's intangible assets such as its globally-recognized brand name, managerial skills, patent protected technology etc. The MNC may find it unprofitable to lease any of these intangible assets to other firms, hence the need to engage in FDI.

The internalization hypothesis is also used to explain FDI flows and it postulates that the desire for firms to replace market transaction with internal transaction results in FDI. It was built on Coase (1937) assertion that forming a firm can help minimize certain marketing costs. The rationale for internalization is the presence of externality in the goods and factor markets. This hypothesis explains why firms indulge in FDI instead of importing inputs from or exporting their finished products to foreign countries.



However, it is not always possible to transfer certain factors of production such as natural resources and labour through international borders due to trade barriers in some countries, and so the location hypothesis explains the existence of FDI in this context. Also, there is the locational advantage of establishing a firm due to cheap labour (low wages) or raw material availability. For example, FDI flows to China have seen an astronomical increase in the past decade due to relatively cheap labour. India has also been able to attract a significant amount of labourintensive FDI flows, especially in the textile and footwear industries, from high-waged countries due to the size of labour force and low wages in the country.

The product life-cycle hypothesis was developed by Vernon (1966) and postulates that a product goes through a cycle of initiation, exponential growth and decline, a sequence that is similar to the three cycles firms go through from the moment a product is produced. This hypothesis further states that firms engage in foreign direct investment at some stage in the life cycle of the product they innovate. The first stage is where the initial production of the product takes place at the home country of the firm. The second stage represents the maturity of the product and the export of the product to other high income countries where the demand of the product is fairly high. As the demand for the product increases, other firms enter the market for competition to begin, and this prompts the innovative firm to indulge in FDI in these countries to meet local demand. The third stage is where the innovative firm engages in FDI in developing countries in order to seek cost advantages due to price competition from other firms producing the similar product.

### 2.2.3.3 Other Theories

There are other factors assigned to the reasons why MNCs indulge in FDI and this ranges from hypothesis to economic or political factors. The internal financing hypothesis is the first to be considered here and it states that MNCs direct a substantial amount of profit generated from a subsidiary firm to finance the expansion of FDI in the host country. Thus, profits generated by the subsidiary are reinvested in the country where the subsidiary operates.

The currency areas hypothesis and the effect of exchange rate was developed by Aliber (1970/71) and it states that a firm decision to indulge in FDI is based on the strength of the local currency. That is, a firm in a country belonging to a country with a strong currency has the greater tendency to indulge in FDI than a firm belonging to a country with weak currency. This hypothesis assumes that countries with a weak currency tend to be the host of FDI while countries with a strong currency tend to be the source of FDI. The rationale of the currency areas hypothesis and the effect of exchange rate is based on three factors, namely; foreign exchange risk, capital market relationships and the market's preference for holding assets denominated in a strong currency.

The Kojima hypothesis is another way of explaining FDI, and it states that FDI is a means of transferring capital, superior managerial skills and technological knowledge from a wellendowed source country to a less-endowed host country. This hypothesis has two classifications for FDI, namely; trade-oriented, which focuses on welfare improvement in both the source and host countries since excess demand of imports as well as excess supply of exports are generated through trade openness. The second of the classification, anti-trade-oriented, is the direct opposite of the trade-oriented and has adverse effects on trade. The rationale for the Kojima hypothesis is the need

to consider comparative costs as well as the complementarities of trade and foreign direct investment.

Political or country risk is an important factor in determining FDI inflows. Countries with unstable political landscape as well as many restrictions such as embargo on capital repatriation to investors' home country and credit indicators find it difficult to attract FDI.

Tax policies of the host country also play a major role in attracting FDI, and Jun (1989) gives three main channels through which tax policies affect FDI inflows. He stated that while tax policies on income generated abroad has a direct effect on net return on foreign direct investment; tax policies on income generated at home affects both the net profitability of domestic investment and the relative profitability of foreign and domestic investments. The third channel examines the effect of tax policies on the relative cost of capital of both domestic and foreign investment.

Many multinational corporations may indulge in foreign direct investment in order to circumvent trade barriers. Protectionist policies such trade barriers in the form of tariffs or embargo on the importation of certain products may result in FDI inflows.

Lastly, there is the dependency theory that postulates that the overdependence on foreign capital or investment result in a negative impact on income distribution and growth of an economy. The rationale for this theory, according to Amin (1974) is that an economy which is effectuated by foreign control does not develop as an important constituent but in a disjoint manner.

In Ghana, the imperfect market theories can best explain the foreign direct investment inflows since majority of the MNCs who establishes subsidiaries in the country are from Europe or the

Middle East. Most of these MNCs engage in FDI in the country to seek cost advantages (under the product life-cycle hypothesis) and also due to the availability of raw materials as well as low wages. Also, the stable political climate coupled with tax holidays and free import of raw materials by foreign investors give much incentive for FDI inflows in the country.

### **2.3 Empirical Review**

The effect of external capital flows on economic growth has, in recent years, been in the forefront of global economic agenda since the economic meltdown in 2008 to 2009. Official development assistance, foreign direct investment, portfolio and equity investment and workers' remittances have been the variables used mostly in these studies. However, this study investigates the effects of official development assistance and foreign direct investment on economic growth.

Various authors have modeled this relationship in different ways and have arrived at mixed results.

The empirical relationship between ODA and economic growth as well as FDI and economic growth has been reviewed extensively in this section.

Using an OLS regression model, Aizenman et al. (2011) estimated the relationship between economic growth and lagged international capital flows for a panel of more than 100 countries during 1990 to 2010. Their study revealed that the growth-effects of lagged capital flows depends on the type of flows, economic structure and global growth patterns. However, they found a robust and large growth-effect of FDI (both inflows and outflows).



Benmamoun and Lehnert (2013) compared the effects of FDI, ODA and workers' remittances on economic growth using system-generalized method of moments approach for a sample 182 low and middle income developing countries covering 1990 to 2006. They found that FDI, ODA and remittances are significant positive drivers of economic growth in low income countries.

Adegboye et al. (2014) also examined the dynamic effects of external capital inflows on the growth of the Nigerian economy using vector error correction mechanism approach for quarterly data covering the period 1981 to 2012. They showed that the categorization of external capital inflows into direct and portfolio has significant relevance in terms of their effect on economic growth in Nigeria while external debt exerts a larger impact on economic growth.

### **2.3.1 Official Development Assistance and Economic Growth**

Recently, many questions have been raised about the period development assistance inflow to an economy should last for the self-sustaining growth level to be achieved. There are authors such as Sachs (2005) who argue that development assistance should be discontinued after 2025 whiles Rostow (1960) also argue that ODA should be discontinued after 15 years of inflow to an economy.

Empirical studies on the relationship between official development assistance and economic growth over the past four decades can be divided into several phases (Mosley, 1980, Hansen and Tarp, 2000; Clemens et al., 2004). The evidence of the ODA-Growth relationship has received much attention in recent times. However, the effect of ODA on economic growth has had mixed results.

Following the works of Feder (1982) and Ram (1986), Lloyd et al. (2001) formulated a simple model in which ODA impacts on growth via its effect on government spending in their Aid, Export and Growth nexus in Ghana for the period 1970 to 1997. They found that exports and public investment had a negative impact on short-run growth whilst aid had no significant impact in the pre-1983 period while the post-1983 period structural reforms enhanced the effectiveness of aid, public investment and exports, thereby ensuring positive growth effects.

Durbarry, Gemmell and Greenaway (1998) also estimated the impact of ODA on aggregate savings, investment and growth using an augmented Easterly-Fisher model for a sample of 68 developing countries in Sub-Saharan Africa, Latin America and the Caribbean. They showed that ODA has a strong positive growth-effect, on condition that a country has a stable macroeconomic environment.

However, Easterly (2006) found no evidence in support of the existence of poverty traps and an insignificant evidence in support of the big push theory when analyzing the big push, poverty traps and take-offs in economic development for a sample of 137 countries using ordinary least squares (OLS) method. According to him poor countries like China, India, Lesotho and Botswana emerged from poverty and has seen sustainable growth in recent years without any significant development assistance while DR Congo and Chad, for example, have achieved no significant growth despite massive development assistance received.

Chenery and Strout (1966), who pioneered the Investment-Savings and Import-Export model (the Two-gap model), found a significantly positive relationship between official development

assistance (foreign aid as it was referred to) and economic growth using regression analysis for a sample of 50 developing countries. Their study further showed that an increase in investment helps boost economic growth by increasing output and per capita income. However, investment required to increase output depends on domestic savings and in a case where there is a financing gap, foreign assistance would be needed to fill it.

In the Import-Export model, Chenery and Strout (1966) elaborated that any economy that wishes to increase output should import mainly capital goods and export the goods produced to realize higher export earnings than import and that in case export earnings become lower than imports, foreign assistance would be needed to balance the account.

The two-gap model which is an extension of Harrod (1939) and Domar (1946) models, contemplate that aid can bridge the gap between savings, fiscal and foreign exchange and as a result lead to economic growth. Thus, development assistance has a far reaching impact on macroeconomic variables which lead to growth.

Empirical studies conducted by Levy (1988) and Hadjimichael et al. (1995) for sub-Saharan Africa reported a significant positive relationship between ODA and GDP per capita growth. Gupta and Islam (1983) also found a statistically positive effect of ODA on economic growth for cross sections of ten-year growth in 52 countries. They stated that the instrumented aid had a significant positive effect on growth at the 10% significance level in the 1960s and 1% significant level in the 1970s.

However, Mosley (1980) found a weak negative relationship between ODA and growth using a simultaneous equation but a significantly positive relationship for the poorest countries in subSaharan Africa.

Also, Mosley et al. (1987) found a zero effect of gross official development assistance on growth from 1960 to 1983 for a larger sample of countries. They also found zero impact of ODA on growth by instrumenting for ODA only in the 1970s. However, they found the coefficient of ODA to be negative without instrumentation and positive when ODA is instrumented in the 1970s and a positive coefficient (in OLS estimation) during 1970 to 1983 while restricting the sample to only Africa. Their study takes into account a different dimension in the ODA-Growth nexus due to Mosley et al.'s use of gross ODA instead of the usual net ODA used by numerous authors.

Dowling and Hiemenz (1983) report a positive nexus between ODA and growth in Asian countries from 1970 to 1978. Taking into consideration policy variables such as trade and financial liberalism, they concluded that policies that seek to liberalize trade and finances contribute significantly to the growth of gross domestic product through the mobilization and allocation of development assistance resources.

Quartey (2005) sought to find innovative ways of ensuring aid (ODA) effectiveness in Ghana and concluded that since the multi-donor budgetary support reduces transaction costs, the government of Ghana must capitalize on donor accounting systems to build domestic capacity, make good judicious use of funds, reduce the national debt and improve the predictability of aid inflows in the country. He further suggested that since the multi-donor budgetary support is in tandem with other forms of project aid, synchronizing the two will ensure the effectiveness of foreign aid.



In evaluating the joint effect of official development assistance and technical cooperation grants (TCG) on economic growth from a sample of 30 Sub-Saharan African countries, McKee and Bell (2013) found that official development assistance, human capital, domestic investment and international trade increases as economic growth increases. However, they found that the joint effect of TCG and ODA on growth has a statistically significant negative relation. Technical cooperation grant had a statistically insignificant effect on economic growth though it affects growth jointly with ODA.

#### **2.3.1.1 The Long Run Relationship**

The effectiveness of development assistance on growth can be seen in terms of reducing poverty, bridging the gap between rural and urban development or contributing to the infrastructural development of a country. The relationship between official development assistance and economic growth has had much attention in recent years. Papanek (1973) became the first author to regress growth on ODA (Clemens et al., 2004) and found a 'strongly significant' relationship between the two variables in 51 countries in short periods of five years, ranging from 1950 to 1954, from 1955 to 1959 and from 1960 to 1965. He further stated that ODA is the surest way for any economy to fill its financing gap.

Official development assistance is an important source of development finance for the Ghanaian economy in the short term (Osei, 2012). Because in the short term, it increases government expenditure (especially on infrastructural development), and ease some of the debt of the country, however its true effect in the long run is ambiguous.

Clemens et al. (2004) found a statistically significant and strong positive short run relationship between ODA and economic growth but found no significant relationship between the subcategories of development assistance (humanitarian or long term aid) and growth over the fouryear period, using instrumental variable and causality approaches for a sample of sub-Saharan African, Asian and Latin American countries covering 1971 to 2000. Thus, development assistance effects growth only in its aggregate form.

In recent years, progress has been made (especially by developing countries) not merely to achieve economic growth but to sustain it. Economic growth in the long term has far reaching benefits on poverty alleviation. McGillivray (2005) in his survey of empirical literature on development assistance to African countries stated that the Millennium Development Goals (MDGs) which sought to reduce the number of people living in abject poverty by half of 1990 level by 2015 was compromised due to fall in ODA flows to the continent. He further stated that ODA does not only boost economic growth but also contribute significantly towards the fight against poverty in the long term.

Reddy and Minoiu (2006) found a robustly significant positive impact of developmental aid on growth but a negative effect of geopolitical aid on growth for a sample of developing countries over 1960 to 2000 using a standard cross-section growth-aid model. The authors concluded that the right kind of aid is very important for economic growth in the long run. Minoiu and Reddy (2009) again examined the long run impact of development aid on economic growth and found that developmental aid has a significantly large impact on growth in the long run.

Using structural vector error correction model estimates covering the period 1971 to 2009 to analyze the long run relationship between ODA and growth for Cambodia, Mitra (2013) found that development assistance channeled towards the industrial sector boosts economic growth.

Sakyi (2011) found similar evidence for Ghana in an autoregressive distributed lag bounds test approach to cointegration. He stated that foreign aid and trade openness has a significant contribution to the growth of the Ghanaian economy both in the short and long run in the postliberation period.

However, there are other authors such as Quartey (2005) and Morrissey (2006) who found evidence of a negative long run relationship between official development assistance on economic growth.

### **2.3.2 Foreign Direct Investment and Economic Growth**

The relationship between FDI and growth has been thoroughly researched in recent years. Though theory predicts a positive relationship between FDI and growth, no common agreement exists empirically. However, macroeconomic studies using aggregate foreign direct investment flows in cross-sectional analysis generally depict a positive relationship between FDI and growth than microeconomic studies (De Gregorio, 1992). Bezuidenhout (2009) also stated that there are significant economic linkages between foreign direct investment and economic growth and that growth can be achieved through efficiency seeking sustainable investments.

In examining the growth-effect of FDI, Al-Iriani and Al-Shamsi (2007) estimated the long run relationship between FDI and economic growth in the Gulf Cooperation Council (GCC) using

dynamic heterogeneous panel cointegration and causality tests. Their results suggested a bidirectional causality between FDI and economic growth, and lends support to the endogenous growth hypothesis for the GCC.

Using a Neo-classical production function and the ARDL Bounds approach to cointegration, Blin and Ouattara (2004) investigated the impact of foreign direct investment in Mauritius over the period of 1975-2000. The study showed a statistically significant effect of FDI on economic growth in Mauritius. The study further revealed that private investment has a positive effect on domestic investment and a marginally significant impact on economic growth.

Asafu-Adjei (2005) examined the relationship between FDI and economic growth using regression analyses for the period 1973 to 2003 for Ghana. The study found no evidence of statistical significant growth-effect of FDI in the short run but FDI and financial development showed a statistical significant positive effect on economic growth. He further stated that the interaction between FDI and financial development has a positive impact on growth (a complementarity effect of the two variables). Also, the Granger causality test revealed a bidirectional or feedback effect between FDI and economic growth.

Using instrumental variable method, Lensink and Morrissey (2001) examined the growth-effect of FDI for a sample of 88 countries covering 1975 to 1998. They found a negative growth-effect of FDI.



Ahmad et al. (2012) analyzed the relationship between FDI and gross domestic product using cointegration and error correction model in Pakistan. They used gross domestic product as dependent variable while FDI, domestic capital and labour were used as independent variables. Their results showed a positive relationship between FDI and economic growth in both short and long run.

Sethi and Sucharita (2010) also used regression analyses to examine the effect of FDI on economic growth in Bangladesh and India for data covering the period 1974 to 2009. They found that FDI has a statistical insignificant positive relationship with economic growth in Bangladesh while there exists a statistically insignificant negative relationship between FDI and economic growth in India. They further concluded that the effect of FDI on economic growth is ambiguous for the two countries.

The issue of a positive growth-effect of foreign direct investment has also been ascribed to different factors in literature recently.

Borensztein et al. (1998) found a positive growth effect of FDI in countries with skilled workforce that absorbs FDI spillovers using cross-country framework for 69 developing countries covering 1970 to 1995.

Blomstrom et al. (1994) argued that FDI has a positive impact on economic growth in rich countries and that skilled workforce is not a critical factor in FDI flows for a sample of developing and developed countries covering 1960 to 1990, using regression analysis.

Balasubramanyam et al. (1996) argue that growth-effect of FDI comes as a result of trade openness using hypothesis advanced by Jagdish Bhagwati in a cross-section data relating to a sample of 46 developing countries. However, Romer (1993) takes a somewhat different dimension by stating that idea gaps between rich and poor economies can be bridged through foreign direct investment. Thus, technological advancement and managerial skills can reach poor economies through FDI inflows, which boost productivity and promote growth since there are substantial spillover effects from these transfers on the economy.

Rappaport (2000) also adds to this view by stating that the productivity of firms in an economy, irrespective of access to foreign capital or not, is boosted through FDI. However, De Gregorio (1992) states that there are theories (authored by Brecher and Diaz-Alejandro, 1977; Brecher, 1983; Boyd and Smith, 1999) that suggests stagnation of growth due to the negative impact of FDI (in the presence of trade, price, financial and other distortions) on resource allocation in a panel of 12 Latin American countries for the period 1950 to 1985. Thus, the growth-effect of FDI is ambiguous, according to these theories, and there are models that predict that FDI would have a positive effect on growth only under certain policy conditions.

Using Granger causality test to examine the causality between FDI and economic growth, Choe (2003) found a bi-directional causality that runs from FDI to economic growth for 80 countries over the period 1971 to 1995 whiles Blomstoerm et al. (1994) found a unidirectional causality that runs from FDI to real GDP growth per capita for developed economies during 1960 to 1985. Choe (2003), however, found little evidence of the growth-effect of FDI in his regression model.

Zhang (2001) also found that there is a growth-effect of FDI but under conditions such as macroeconomic stability and trade openness for eleven developing countries in East Asia and Latin America.

There are other empirical studies such as Choe (2003), Chowdhury and Mavrotas (2006) that suggest that foreign direct investment inflows are dependent on a country's level of growth.

Meanwhile, Frimpong and Abayie (2006) found no causality between FDI and economic growth during the pre-structural adjustment program but a causal relationship was found between FDI and economic growth during the post-structural adjustment program in Ghana.

Borensztein et al. (1998) found that FDI has a larger impact on economic growth than domestic investment. They further stated that human capital threshold accounted for the growth-effect of FDI in a panel of 69 countries for the period of 1970 to 1989, but Ram and Zhang (2002) found no evidence of human capital threshold accounting for the growth-effect of FDI for 85 countries. Dees (1998), and Chakraborty and Basu (2002) confirmed the growth-effect of FDI in China and India respectively.

#### **2.3.2.1 The Long Run FDI-Growth Relationship**

Borensztein et al. (1998) and De Mello (1999) found evidence of a long run relationship between FDI and economic growth in developed and developing economies using cross-country regression framework for data covering 69 developing countries from 1970 to 1990.

Using cointegration analysis to examine the short and long run relationship between foreign direct investment, trade and economic growth for Greece from 1960 to 2002, Dritsaki, et al.

(2004) found a long run relationship between these variables.

Dixon and Boswell (1996) found an initial significant positive impact of FDI on growth but a negative long run relationship between the two variables, using regression analysis for a sample of 76 LDCs covering 1967 to 1973. Thus, the growth-effect of FDI may be positive for an economy in the short term but as the country becomes dependent on foreign investment, economic growth will decline. Similarly, Kentor (2003) found a negative long run relationship between FDI and growth for a sample of 51 LDCs, using regression analysis.

Antwi and Zhao (2013) also found a negative long run relationship between FDI and economic growth in Ghana using the Johansen cointegration approach for the period 1980 to 2010.

Using cointegration and Granger causality tests to examine the short and long run relationship and the causality between real FDI stock and economic growth (with real GDP as proxy) respectively, Zhang (2001) found mixed evidence of the growth-effect of FDI for East Asia and Latin America from 1960 to 1997. He found that there is a growth-effect of FDI in the long run in countries such as Hong Kong, Indonesia, Mexico and Taiwan while there exists a short run growth-effect in Singapore and no growth-effect of FDI both in the short and long run for countries such as Argentina, Brazil, Columbia, Korea and Malaysia.



Though most of these studies examined the short and long term effect of external capital flows for different countries, none of the studies reviewed examined the fiscal response effect of official development assistance for Ghana.

### **2.3.3 The Fiscal Response Effect of Official Development Assistance (Aid)**

In studying the potential effect of ODA inflows on public consumption and investment spending, the fiscal response model is the most widely used in literature (Mosley and Hudson, 1987; Binh and McGillivray, 1993). The fiscal response model examines the dependency of different government expenditure and revenue patterns on ODA. The sterling criticism of these models is the unreliable and weak data found in developing countries as well as the sensitivity of model specification (OPM, 2003; Nilsson, 2004). However, due to its significant property of assessing budgetary support which ensures accountability to the citizenry.

In examining the issues regarding the composition of official development assistance flows, Williamson (2000) stated under the conditionality characteristics that capital inflows are independent of any conditionality only if the recipient is required to implement the funded project. This gives rise to fiscal response constraints since the marginal benefit of the aid is not fully realized due to the channeling of the aid to sectors for which it was not intended for. Therefore, examining the extent of the fiscal response of ODA in the various sectors of the economy is very crucial, since about 70 percent of all development assistance flows to developing countries targets public investment projects that are critical to economic growth (OECD, 2015). Holmqvist (2000) also adds up to this assertion by stating that literature on foreign aid, starting with theoretical

foundation of the two-gap model developed by Chenery and Strout (1966), posit that ODA flows allocated to public investment is the engine of growth, especially in developing countries.

However, Griffin (1970) argued that per the aid-savings displacement theory, domestic resources are substituted for aid inflows. Therefore, governments in recipient countries may reduce tax efforts since greater amount of ODA is allocated to public expenses. However, this would reduce domestic savings as well as private investment and result in government budget deficit in the long term since government expenses would increase in response to increase in development assistance inflows.

Following McGillivray and Morrissey (2004), Morrissey (2012) attempts to show that there are four very significant issues that aid addresses with respect to its effect on government expenditure and taxation. He assessed this effect by asking four important questions.

First, he tried to address the impact of foreign aid on the composition of government expenditure by asking if government spending has increased (as a share of spending) in priority areas of donors. Second, he asked if there has been a full increase in total government expenditure by the amount of development assistance inflow. Here, he raised a question about the extent of aid's effect on total government expenditure (relative to GDP) and how evolving it is over time. Third, he looked at aid's effect on taxation and the form of development assistance received in the recipient country; that is, if it is a loan or concession (per the official definition of ODA by the OECD) and whether it affects the tax per GDP ratio.

This question reveals the extent which aid and its associated conditionalities affects revenue mobilization within the domestic economy. Fourth, the aid effectiveness paradigm is put to test. Morrissey (2012) further questioned if the effect of aid inflow on both government spending and

taxation has any meaningful impact on budget behavior as well as achieving the intended purpose of the aid. This point presents the need to examine the fiscal response effect of aid.

McGillivray and Morrissey (2001) found complex and varying results for the fiscal effects of aid in developing countries. They further suggested that aid tends to increase government spending over the value of aid, thus, a US\$1 million aid has the tendency of increasing government spending by more than the US\$1 million aid. They believe that this has a far reaching effect on the tax efforts and borrowing of the government of the recipient country.

Using a panel data covering 67 countries from the period 1972 to 2000, Chatterjee et al. (2012) found that 70 percent of total aid is fungible at the aggregate level. Their results further suggested that aid to public investment crowds-out from 80 to 90 percent of recipient government's investment spending. Furthermore, they show a significant positive effect of aid on household consumption but found no effect of aid on private investment.

The conclusion, mostly, drawn from aid fungibility analysis is that a given amount of aid results in a proportionate increase in government spending of the recipient country (Morrissey, 2012).

However, not all aid that goes into government spending has the propensity to increase it.

Morrissey (2015) stated that the recipient country government is not fully informed of the quantum of aid available to finance expenditures on public goods when making its budget decisions. He further stated that the government's spending is, however, financed by three main sources of revenue: aid to the government, domestic tax revenue and borrowing.

Sijpe (2010) found limited fungibility for technical cooperation while a low fiscal response was found for sector program aid using static fixed effects model estimation technique.

Weisman (1990), using computable general equilibrium (CGE) model, found strong evidence of ODA fungibility which in turn increases the price of non-traded goods and services in Papua New Guinea. According to him, since producers increase supply in non-traded goods in response to increase in their prices, ODA inflows resulted in the ‘Dutch Disease’ that negatively affected export earnings of the country since resources are shifted from the production of traded goods.

Also, Collier and Gunning (1992) applied the CGE model to investigate the presence of ‘Dutch Disease’ among selected African economies. They found government expenditure supported by ODA inflows raised aggregate demand and wielded upward pressures on prices in the nontradable sector. Labour and capital resources were shifted away from the tradable sector to nontradable sector as a result of the boom in the non-tradable sector. They stated that devaluation of the domestic currency is the best solution since it reduces this adverse effect on the tradable sector.



# KNUST

## CHAPTER THREE

### METHODOLOGY

#### 3.1 Introduction

This chapter provides overview of how the research was carried out. The chapter outlines the theoretical framework, specification of the model, estimation methods, as well as the sources of data and variable definitions.

#### 3.2 Theoretical Framework

Economic growth, according to theory, can be modeled in two ways;

1. As an outward shift in an economy's production possibilities curve and
2. As a shift to the right in its long run aggregate supply curve.

With the assumption that the economy's factors of production and its technology are unchanged, changing them will shift both curves stated above. Hence, an improvement in technology or increase in either the quality or quantity of factors of production contributes to economic growth. Theoretically, the model of economic growth rests on some key important economic variables. The Solow growth model, for example, consists of economic quantities that can be measured, linkages that describe how society is faced with scarcity and therefore has to make informed decisions by forgoing the consumption of other goods and services in order to maximize its scarce resources and conditions that postulate the steady state level of an economy, is one of the widely

used models of growth in empirical analysis. The key variable in the Solow model is labour productivity, thus, how much the average worker in a country is able to produce (output per worker).

Therefore, the production function is given as:

$$Y = F(AL, K) \dots \dots \dots (3.1)$$

Where Y represents output, K represents capital stock; L represents labour stock and A represents knowledge (or total factor productivity in this study); Romer (2012).

Since there is the assumption of constant returns to scale of the production function, we can divide through equation 3.1 by  $AL$ . This implies;

$$F\left(\frac{K}{AL}, 1\right) = \frac{1}{AL} F(K, AL) \dots \dots \dots (3.2)$$

In this regard,  $\frac{K}{AL} = k$  represents capital per unit of effective labour,  $F\left(\frac{K}{AL}, 1\right) = \frac{Y}{AL} = y$  represents output per unit of effective labour and  $f(k) = F(k, 1)$ . Therefore equation 3.2 can be rewritten as;

$$y = f(k) \dots \dots \dots (3.3)$$

Here, output per unit of effective labour is a function of capital per unit of effective labour.

The empirical model specified in this study was primarily motivated by Solow (1956). The reason for choosing the Solow model is because it is a simple and dynamic general equilibrium model with focus on proximate causes of economic growth. The model helps in the interpretation of both economic growth over time and cross country output differences.

### 3.3 Model Specification

Following Barro (1991), a Solow model with constant population growth and labour-augmenting technological change in continuous time is formulated as:

$$y(t) = A(t)f(k(t)) \dots \dots \dots (3.4)$$

And

$$\frac{\dot{k}(t)}{k(t)} = \frac{sf(k(t))}{k(t)} - \delta - g - n \dots \dots \dots (3.5)$$

Define  $y^*(t) = A(t)f(k^*)$ , where  $y^*$  refers to the steady state level of output per capita.

Where  $t$  denotes time.

Therefore, a Cobb-Douglas production function is formulated as follows;

$$Y = F(K, AL) \approx y = f(k, 1) \dots \dots \dots (3.6)$$

Where  $Y$  is

$$= AK^\alpha L^\beta, 0 < \alpha/\beta < 1 \dots \dots \dots (3.7)$$

aggregate output,  $K$

represents capital stock,  $L$  represents labour stock,  $A$  represents technology or total factor

productivity (TFP) while  $\alpha$  and  $\beta$  represent the elasticities of aggregate output with respect to capital stock and labour.

Capital stock,  $K$ , is then divided into two categories, namely; domestic capital ( $K_D$ ) and foreign capital ( $K_F$ ). The production function then becomes;

$$Y = A K_D^{\alpha_1} K_F^{\alpha_2} L^\beta \quad \text{where } \alpha = \alpha_1 + \alpha_2 \dots \dots \dots (3.8)$$

Here, gross domestic capital formation is used as proxy for domestic capital while official development assistance and foreign direct investment are used as proxies for foreign capital.

Therefore, the production function becomes;

$$Y = A (ODA, FDI)^{\alpha_1} GCF^{\alpha_2} L^\beta \dots \dots \dots (3.9)$$

Linearizing and expanding equation (3.9), the model for real GDP per capita growth in time series econometric form for Ghana is;

$$\ln Y_t = \alpha_0 + \alpha_1 \ln ODA_t + \alpha_2 \ln FDI_t + \alpha_3 \ln GCF_t + \alpha_4 L_t + \alpha_5 \ln X_t + \varepsilon_t \dots (3.10)$$

Where  $Y_t$  represents real GDP per capita growth,  $X_t$  is a control variable which includes the rate of inflation (INF) and implied PPP conversion rate (EXR),  $\varepsilon_t$  represents white noise error term,  $t$  is time and  $\ln$  denotes natural logarithm.

Therefore, the operational model is formulated as:

$$\ln Y_t = \alpha_0 + \alpha_1 \ln ODA_t + \alpha_2 \ln FDI_t + \alpha_3 \ln GCF_t + \alpha_4 L_t + \alpha_5 \ln INF_t + \alpha_6 \ln EXR_t + \varepsilon_t \dots (3.10)$$

The choice of a log-linear model is as a result of its superiority to other approaches based on both theory and empirical basis (Kalim and Shahbaz, 2009; Cameron, 1994).

### 3.4 Theoretical Framework of the Fiscal Response Effect of Official Development

#### Assistance

There are fundamentally two approaches to modeling aid fungibility. The first approach is the fiscal response model which was developed by Heller (1975) and extended by Mosley *et al.* (1987), Gang and Khan (1991) and Franco-Rodriguez *et al.* (1998). This approach is used to model a loss minimization function subject to expenditure constraints by the government so as to obtain empirical frameworks in structural or reduced form equations. The coefficients of the fiscal response model can be derived by estimating the fiscal behavioral coefficients from the equations.

The second is linking the composition of aid to that of government spending (utility maximizing approach); popularized by Pack and Pack (1990; 1993). Other authors such as Khilji and Zampelli (1991; 1994), Feyzioglu *et al.* (1998) and Swaroop *et al.* (2000) and Chatterjee *et al.* (2012) adopted this approach by deriving utility maximizing problems. This approach is used to examine the essence of the bureaucratic decision making process.



Following Heller (1975) and Mavrotas (2002), a simple utility maximization model of public expenditure on consumption,  $PC$ , and investment,  $PI$ , two sources of domestic financing (taxation,  $T$ , and borrowing,  $B$ ) and official development assistance inflow is formulated as:

$$U = u(PI, PC, T, B, ODA) \dots \dots \dots (3.11)$$

Where  $U$  = welfare of the public sector

$PI$  = public spending on investment

$PC$  = public spending on consumption

$T$  = tax revenue

$B$  = domestic borrowing

$ODA$  = official development assistance inflows

Here, the government is seen as a rational utility maximizer and has alternative uses of public resources (on consumption or investment). Also, it is assumed that the government set targets for both expenditure and revenue categories. The government is able to maximize its utility when the targets set are met (McGillivray and Morrissey, 2001) and therefore maximizes the utility of this quadratic loss function:

$$U = \pi_0 - \frac{\pi_1}{2}(PI - PI^*)^2 - \frac{\pi_2}{2}(PC - PC^*)^2 - \frac{\pi_3}{2}(T - T^*)^2 - \frac{\pi_4}{2}(B - B^*)^2 - \frac{\pi_5}{2}(ODA - ODA^*)^2 \dots \dots \dots (3.12)$$

Where  $\pi_i > 0, for i = 1, 2, \dots, 5$ .  $\pi_i > 0$  indicates the existence of diminishing marginal utility for all levels of  $PI, PC, T, B$  and  $ODA$ . The variables with an asterisk (\*) are the target levels of the government. Equation (3.12) is compatible with the idea that deviations from the target levels ( $PI^*, PC^*, T^*, B^*$  and  $ODA^*$ ) is undesirable for the government (Binh and McGillivray, 1993;

Mavrotas, 2002).

Therefore, the overall budget constraint of the government is given as:

$$PI + PC = T + B + ODA \dots \dots \dots (3.13)$$

Here, it is assumed that the government runs a balanced budget; therefore, total public expenditure cannot exceed total revenue. Equation (3.13) can be decomposed as:

$$PI = (1 - \gamma_1)T + (1 - \gamma_2)ODA + B \dots \dots \dots (3.14)$$

Here, public investment is financed by tax revenue, official development assistance inflow and public borrowing. And

$$PC = (1 - \gamma_1)T + (1 - \gamma_2)ODA + B \dots \dots \dots (3.15)$$

Which means tax revenue, official development assistance inflows and public borrowing that are not used for public investment are directed towards public consumption.

Where  $0 < \gamma_i < 1$  for  $i = 1, 2$ .

$\gamma_1$  represents fraction of taxes directed towards public investment spending  $\gamma_2$  represents fraction of ODA directed towards public consumption spending

In conclusion, the government maximizes the utility of equation (3.12) subject to the budget constraints (3.14) and (3.15). All the variables used in the model are measured by their percentage share of GDP.

However, according to McGillivray and Morrissey (2001), a major problem with this model is the interpretation of  $\gamma_2$ ; as the extent of fungibility. They further showed disagreement with the

assumption that all ODA inflows are targeted towards the financing of public investment,  $PI$ , which makes  $\gamma_2 = 0$  ex ante, and the proportion of ODA flows to public consumption,  $PI$ , ex post measures of fungibility. However, there are other expenditures such as government spending in the social sector that donors may be willing to support, hence,  $\gamma_2 > 0$  ex ante, implying that the estimated value of  $\gamma_2$  becomes a measure of maximum or full fungibility.

There is also the problem of the model being over-constraint. That is, even in the midst of sufficient ODA inflows to meet all targets, it would be impossible for the maximum value of  $\pi_0$  to be reached. In equation (2.6), though there was sufficient total revenue, the  $\pi$ s constrain allocation and undermine the specific expenditure targets in equation (2.5). However, using equation (2.6) as the budget constraint solves these problems but makes the structural equations intuitively unrealistic (McGillivray, 2000).

Meanwhile, Gang and Khan (1991) used this model in a time series analysis of foreign aid, taxes and investment for India. However, there is no consensus on the most effective and appropriate mechanism to modeling fiscal behavior of ODA inflows.

### 3.4.1 Empirical Specification

In examining the fiscal response effect of official development assistance in Ghana, a general model of total public spending is formulated as:

$$\ln G_t = \rho_0 + \rho_1 \ln T_t + \rho_2 \ln ODA_t + \rho_3 \ln GDP_t + \rho_4 \ln ToT_t + \rho_5 \ln INF_t + \rho_6 \ln EXR_t + \rho_7 \ln S_t + \varepsilon_t \dots \dots \dots (3.16)$$

Decomposing into the various components of public spending:

$$DA_t + \tau_3 \ln GDP_t + \tau_4 \ln ToT_t + \tau_5 \ln INF_t + \dots (3.18)$$

$$DA_t + \tau_3 \ln GDP_t + \tau_4 \ln ToT_t + \tau_5 \ln INF_t + \dots (3.18)$$

PI = public investment  
T = domestic tax revenue

PI = public investment spending

$T$  = domestic tax revenue

INF = inflation rate

EXR = implied PPP conversion rate

GDP = gross domestic product

$ln$  = natural logarithm

$\ln$  = natural logarithm

behavior on the part of government, that is if ODA inflows reduce

is specified as:

$$\alpha_2 \ln ODA_t + \alpha_3 \ln FDI_t + \alpha_4 \ln INF_t + \alpha_5 \ln S_t + \alpha_6 \ln EXR_t$$

....(3.19)

$\epsilon$  = error term

$\ln$  = natural logarithm

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....(3.19)

$\epsilon$  = error term

## Expectations of the Variables

$\epsilon$  = error term

## Expectations of the Variables

## Expectations of the Variables



positively whilst the coefficients of inflation and exchange rate are expected to have a negative relationship with economic growth, as depicted in table 3.1 below. Thus, ceteris paribus, an increase in either ODA, FDI, GCF, NX or S directly lead to boost in economic growth whilst an increase in either INF or EXR will result in a fall in growth.

Also, the coefficients of domestic tax revenue, ODA, FDI, S, GCF are expected to affect total public spending, public consumption and investment spending positively while INF and EXR are expected to have a negative effect on the dependent variables, as depicted in table 3.1 below.

**Table 3.1: A Priori Expectations of Variables based on Theory**

<b>Dependent Variable: Real GDP per capita - 1975 to 2014</b>			
<b>Independent (Measurement)</b>	<b>Variable</b>	<b>Theoretical and Empirical Basis/Sources</b>	<b>Sign</b>
Official development assistance (Current US\$)		Chenery and Strout (1966), Papanek (1973) and Osei et al. (2005)	$\alpha_1 > 0$ (Positive)
Foreign direct investment (Balance of Payment, current US\$)		Blomstrom et al. (1994), De Mello (1999) and Al-Iriani and Al-Shamsi (2007)	$\alpha_2 > 0$ (Positive)
Gross fixed capital formation (Current US\$)		Khan and Reinhart (1990),  Ghura and Hadjimichael (1996), and Ugochukwu and Chinyere (2013)	$\alpha_3 > 0$ (Positive)

Inflation (CPI, annual)	Fischer (1993), Ghosh and Phillips (1998) and Quartey (2010)	$\alpha_4 < 0$ (Negative)
Exchange rate (Implied PPP conversion rate)	Gylfason and Radetzki (1985), Atkins (2000) and Kamin and Roger (2000)	$\alpha_5 < 0$ (Negative)
Gross National Savings (Percent of GDP)	Solow (1956), World Bank (1993) and Rodrik (1998)	$\alpha_7 > 0$ (Positive)
<b>Dependent Variable: Total Public Spending, Public Investment and Consumption Spending</b>		
Domestic Tax Revenue (Percent of GDP)	Brown (2002), Padovano and Galli (2002) and Wang (2007)	$\rho_1 > 0$ (Positive)
Official Development Assistance (Percent of GDP)	MacGillivray and Morrissey (2001), Chatterjee et al. (2012) and Mavrotas (2002)	$\rho_1 > 0$ (Positive)
Foreign Direct Investment (BoP, current US\$)	Martinez-Vazquez and Zhang (2007), and Greenstone and Moretti (2003)	$\rho_1 > 0$ (Positive)
Trade Openness (Current US\$)	Katzenstein (1985) and Vaidya (2002)	$\rho_1 > 0$ (Positive)
Gross National Savings (Percent of GDP)	Looney (1995) and World Bank (2011)	$\rho_1 > 0$ (Positive)

Exchange Rate (Implied PPP conversion rate)	Edwards (1989), Frankel (2004) and, Caputo and Fuentes (2007)	$\rho_6 < 0$ (Negative)
Inflation Rate (CPI, annual)	Alavirad (2003), Bonato (2008)	$\rho_6 > 0$ (Positive)

### 3.6 Estimation Method

The comparative effect of official development assistance and foreign direct investment on economic growth is analyzed using quantitative data. Software such as STATA and Gretl are used in computing and analyzing the data.

### 3.7 Testing Time Series Properties

Cointegration analysis is the specific model used in this study to examine the long term relationship between ODA, FDI and economic growth. The cointegration concept, which was introduced by Granger and Weiss (1983), Granger (1983) and Engle and Granger (1987), is used in testing for the validity of economic theories and models. It is applied when time series data is found to be non-stationary, thus  $I(0)$ .

Two variables are said to be cointegrated when there is linear association between them. Thus, there is the presence of linear combination between them, though each variable is non-stationary. For example, if two variables, X and Y are found to be non-stationary,  $I(0)$ , then a linear combination of them would also be non-stationary. However, in order to circumvent the problem of making wrong inference, the variables must be first-differenced. Though taking first difference of the variables also has its shortfalls due to loss of low frequency information, Engle and Granger (1987) posited that the disequilibrium error must vacillate around zero; which shows stationarity, when there is the presence of an equilibrium relationship between the variables. In testing for the

presence of cointegration relationship, the degree of integration in each of the variables must first be established. Thus, a unit root test must be conducted to ascertain the order of integration. Then, the cointegration relationship can be estimated.

### 3.7.1 Unit Root Test

Before a cointegration regression can be estimated, the unit root test has to be conducted first to reveal the order of integration for the series. The order of integration for the variables must be one, thus  $I(1)$ .

There are various tests available in econometrics to test for the stationarity of the series but the Dickey Fuller Generalized Least Squares method was used in this study.

The DF-GLS is a unit root test which has a different inference, null hypothesis of stationarity, as against the ADF test, and is touted as an improvement on the ADF test (ERS, 1996; Frimpong and Oteng-Abayie, 2006). It was developed by Elliott, Rothenberg and Stock (ERS) in 1996. They modified the Dickey-Fuller test statistic using a generalized least squares (GLS) rationale and showed that the DF-GLS has the overall best performance when it comes to small sample size and more effective power in the presence of unknown mean or trend (ERS, 1996).

The basic intuition behind this test statistic is formulated as:

Let  $x_t = (1, t)$ . For time series,  $y_t$ , regress

$$[y_1, (1 - \pi L)y_2, (1 - \pi L)y_3, \dots, (1 - \pi L)y_T] \dots \dots \dots (3.15)$$

On

$$[x_1, (1 - \pi L)x_2, (1 - \pi L)x_3, \dots, (1 - \pi L)x_T] \dots \dots \dots (3.16)$$

Yielding  $\tilde{\rho}_{GLS}$ , where  $\pi = 1 + \bar{c}/T$   $u_0 = 0$  and  $\bar{c} = -13.5$  for the detrended statistic.

Detrending  $\tilde{y}_t = y_t - z'_t \tilde{\rho}_{GLS}$  is then applied to the Dickey-Fuller regressions without trend or



intercept.

The t-statistic on  $\tilde{y}_{t-1}$  is the Dickey Fuller generalized least squares statistic while the t is omitted from  $Z_t$ , and  $\bar{c} = -7$ . The null hypothesis of DF-GLS is that  $y_t$  is a random walk (with a drift)

The GLS detrending and demeaning statistics are similar to the Dickey-Fuller test of constant with a trend or constant with no trend. The GLS detrending has the property of regressing the series to be tested on a constant and linear trend while the residual series is used just as in standard Dickey-Fuller regressions. The GLS demeaning on the other hand, has the constant term appearing in the first stage regression while the residual series is used as the dependent variable in standard Dickey-Fuller regressions.

### **3.8 Cointegration Test (Johansen Approach)**

In conducting the stationarity test, if the series depict the presence of unit root, thus nonstationarity at the levels but stationarity after first difference, the cointegration relationship among the variables can be determined. The linear association between the variables can be estimated by using either the Johansen-Juselius approach (Johansen, 1988; Johansen-Juselius, 1992, 1999) or the Engle-Granger (1987) in order to eliminate spurious correlation and making wrong inferences. Finding the presence of cointegration relationship among the variables can be interpreted as a long run equilibrium relationship (Antwi and Zhao 2013).

Per the objective of this study; to establish if there is long run relationship between official development assistance, real GDP per capita (used as proxy for economic growth) and foreign

direct investment in Ghana, the trace test and the maximum Eigen-value statistics are used and formulated as:

The equation for the Trace ( $\Delta_{\text{trace}}$ ) test is:

$$\Delta_{\text{trace}}(r) = \sum_{i=r+1}^p \ln(1 - \Delta_i) \dots \dots \dots (3.17)$$

Where;  $\Delta_i$  represents the largest estimated value of  $i^{\text{th}}$  characteristic root (Eigen-value) obtained from

the estimated  $\Pi$  matrix,  $r = 0, 1, 2 \dots p - 1$  and

The alternative Maximum Eigen-value ( $\Delta_{\text{max}}$ ) is;

$$\Delta_{\text{max}}(r) = -T \ln(1 - \Delta_{r+1}) \dots \dots \dots (3.18)$$

Where  $T$  represents number of usable observations.

The basic intuition of the Johansen's approach starts with a vector auto regression of order  $p$ , thus  $\text{Var}(p)$ , formulated as:

$$y_t = \mu + \Delta_1 y_{t-1} + \dots + \Delta_p y_{t-p} + u_t \dots \dots \dots (3.23)$$

Where  $y_t$  is an  $n \times 1$  vector of variables that are integrated of order one,  $I(1)$ , and  $u$  is an  $n \times 1$  vector of innovations. Rewriting equation (3.23) gives:

$$y_t = \mu + \delta y_{t-1} + \Pi_1 \Delta y_{t-1} + \dots + \Pi_{p-1} \Delta y_{t-p+1} + \varepsilon_t \dots \dots \dots (3.24)$$

Where;

$$\begin{aligned} \delta &= -(I_n - A_1 - \dots - A_p) \Pi_1 \\ &= -(A_{1+1} + \dots + A_p) \end{aligned}$$

### 3.9 The Long Run Dynamics (Fully Modified Ordinary Least Squares Approach)

The fully modified ordinary least squares (FM-OLS) approach was developed by Phillips and Hansen (1990) to optimally estimate cointegrating regressions by modifying the OLS in order to eliminate the problem of endogeneity in the independent variables that may be accounted for by the presence of cointegration relationship. Also, the FM-OLS method eradicates problems driven by changes in long run correlation between cointegrating equations and stochastic regressors. The method has the property of asymptotically unbiasedness, with a mixture of fully efficient normal asymptotics making it possible for Wald tests using asymptotic Chi-square,  $\chi^2$ , statistical inference. Thus, it modifies the least squares to correct serial correlation effects in order to achieve asymptotic efficiency.

The choice of the FM-OLS method is as a result of its property of introducing appropriate correction to overcome inference problems, thereby validating the t-test for long run estimates (Himansu, 2007). Another property of the FM-OLS technique is that it provides reliable estimates for small sample size analysis and the robustness check of the model.

The Kernel (qs) estimators of parameter nuisance are fully utilized by the FM-OLS technique.

To examine the long run effects of official development assistance and foreign direct investment on economic growth, the FM-OLS model is specified as:

$$Y_t = \psi_0 + \psi_1 ODA_t + \psi_2 FDI_t + \psi_3 X_t + \mu_t \dots \dots \dots (3.27)$$

Where:

$Y_t$  denotes economic growth, ODA and FDI are as defined in section 3.4 above,  $\mu_t$  denotes white noise error,  $\psi_0$  denotes the intercept or constant term,  $t$  denotes time period  $\psi_i$ , for  $i =$

1, 2 and 3 represents the coefficients of the regressors,  $X_t$  is the control variable which includes

official exchange rate (LCU per US\$, period average), gross fixed capital formation (current US\$), inflation rate (consumer prices, annual %), gross domestic savings (% of GDP) and labour stock (annual total).

Therefore, the operational FM-OLS model becomes:

$$\ln Y_t = \psi_0 + \psi_1 \ln ODA_t + \psi_2 \ln FDI_t + \psi_3 \ln EXR_t + \psi_4 \ln INF_t + \psi_5 \ln GFCF_t + \psi_6 \ln S_t + \mu_t \dots \dots \dots (3.28)$$

### 3.10 Seemingly Unrelated Regression (SUR) Analysis

The seemingly unrelated regression (SUR) model, which was developed by Zellner (1962) and expanded by Srivastava and Giles (1987), explains the variation of a set of dependent variables in relation to the variation of independent variables and error terms specific to each variable. Thus, the SUR model estimation has similar property to the univariate multiple regression model but with a set of  $m$  dependent variables (Zellner and Huang, 1962). In other words, it is a set of two or more regression relations estimated on the basis of the variation in dependent and independent variables. Geweke (2003) stated that the SUR model is the second most widely used econometric model (after linear regressions) because of its simplicity and usefulness in explaining demand equations from the Neo-classical static theories of optimization (consumer and producer behavior).

The ordinary least squares (OLS) method has over the years been touted, by the Gauss Markov theorem, as the best linear unbiased estimator. It has been the most widely used in literature due to

its efficiency in estimating regression models with the same independent variables in each equation with normal distribution and zero means, different variances and nonzero covariances.

However, the inadequacy of the least squares estimator stems from the fact that the regression equations are related when the stochastic error terms in the separate regression equations are



correlated and different independent variables are used in the separate regression equations. This, according to Srivastava and Giles (1987), coined the term *seemingly unrelated* since it is assumed that the regression equations are unrelated.

The SUR model gives more precise estimates and predictions which results in better interpretation of applied problems since it analyzes a set of regression equations jointly rather than the singular analysis of equations (Quintana et al., 2003). The fiscal response of official development is estimated using the seemingly unrelated regression (SUR) model.

### 3.11 Data Description and Sources

This study used annual time series data over the period of 1975 to 2014 for Ghana. The data were compiled from the World Bank's World Development Indicators (WDI, 2015) and Ghana Statistical Service (2015). Official development assistance, foreign direct investment (FDI), exchange rate, inflation (CPI), gross capital formation, labour force and real GDP per capita growth as a proxy for Economic Growth are used in the analysis. The focus of this study is on foreign direct investment, official development assistance and economic growth.

**Table 3.2: Macroeconomic Variables used and their Definitions**

Variable	Definition
.....	

Real GDP per capita growth (Annual %)

It is a measure of economic activity or performance of a country and can be divided into labour productivity growth and changes in extent of labour utilization (OECD, 2015). It is calculated as GDP divided by midyear population, without making deductions for depreciation or depletion and degrading of natural resources (WDI, 2015)

Net official development assistance inflows (Current US\$)

It is a measure of international aid flow, mostly, to developing countries with the aim of promoting economic welfare and development. It includes loans with at least a 25 percent grant element. The boundary of these flows includes: military aid, peacekeeping, nuclear energies and cultural programs (OECD, 2015).

Foreign direct investment (Net inflows, current US\$)

It is the net inflows of investment made by an entity/company in one country (source) with controlling ownership of a business in another country (host). In other words, it is an investment made to acquire lasting interest (10% or more of voting stock) in a businesses operating in a country different from the investor's (IMF, 2014)

Gross fixed capital formation (Current US\$)

It measures the value of additions to fixed

Inflation (Consumer price index)

assets minus disposals by all agents of the economy (households, businesses and government). These fixed assets include: plant, machinery and equipment purchases, land improvements, construction of roads, railways, residential and nonresidential buildings. It was formerly known as gross domestic investment.

This refers to a measure of the change in prices of basket of goods and services that are normally purchased by an average household. It is measured in terms of annual growth rate and

indexed with a base year. In Ghana, the major components of the CPI is food and nonalcoholic beverages (which accounts for about 44% of total weight); GSS, (2014).

Implied PPP conversion rate (National currency per current international dollar) This refers to the rate at which a country's currency is converted into the currency of another country so as to ensure that a given amount of the currency of the fore country can purchase the same volume of goods and services in the latter country as in the first country.

Labour force (Total)

This refers to the proportion of the population that is fifteen years and above and is economically active. Specifically, it comprises both male and female who are fifteen years or older and supply labour for the production of goods and services during a specified period (WDI, 2015).

Government Expenditure (% of GDP)

This includes all government current consumption and investment expenditures (purchases of goods and services, wages and salaries, public spending on defense and security, and public spending on capital formation).

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## CHAPTER FOUR

## DATA ANALYSIS AND DISCUSSION OF FINDINGS

### 4.1 Introduction

This chapter deals with the analysis of data on macroeconomic variables; real GDP per capita growth, official development assistance, foreign direct investment, gross fixed capital formation, labour force, inflation and Exchange rate from the period 1975 to 2014. Total public spending, public investment spending, public consumption spending, net official development assistance received, general domestic tax revenue, gross domestic product, trade openness, inflation and exchange rate, gross national savings and foreign direct investment inflows were also used to estimate the general fiscal response of ODA for the period 1980 to 2014 for Ghana.

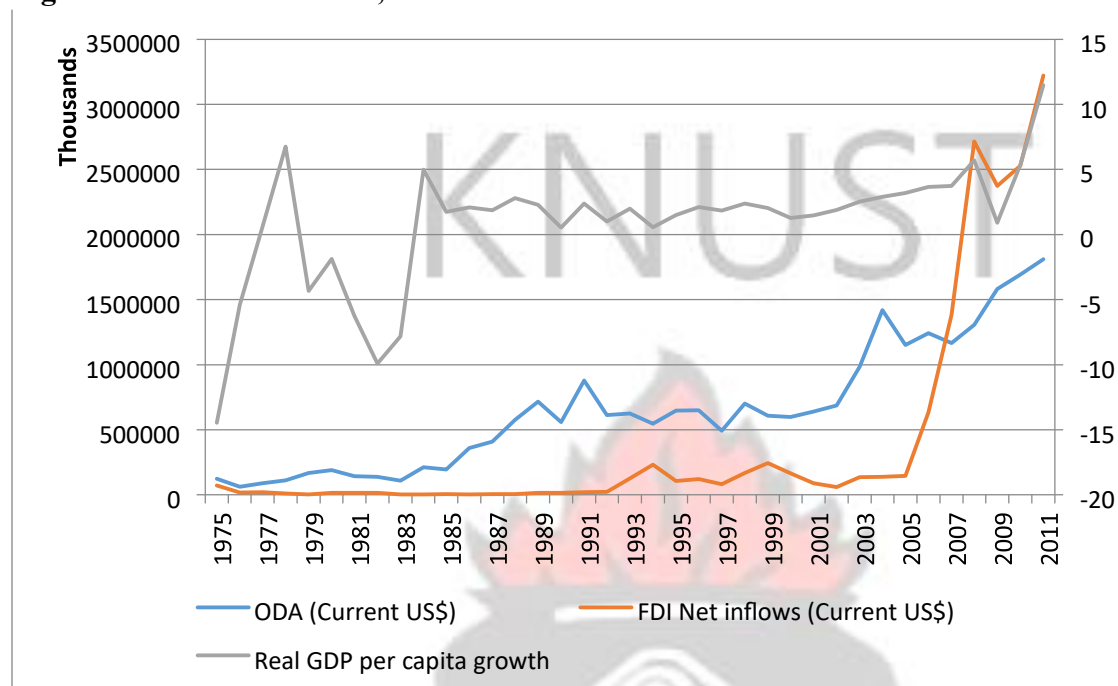
### 4.2 Trends in ODA, FDI and Economic Growth

Figure 4.1 below shows an oscillating trend in GDP per capita growth (proxy for economic growth) which experienced a sharp rise in 1976 but fell in 1978. From 1978, there were higher fluctuations until there was another sudden rise in 1983. Foreign direct investment (FDI), on the other hand, experienced mild fluctuations which had sudden rise in 2006 while official development assistance (ODA) exhibited a much oscillating but continuously upward trend with a slight rise in 2001.

Pitching the series together, ODA has a very minimal response towards economic growth, especially rising periods in economic growth. However, there are periods like 1982, 1997 and 2009 where both series saw a rise and a fall in 1980. FDI, on the other hand, shows a fair responsiveness to economic growth. Both series experienced a rise in 1992 and 2009, a fall in 1994 and 2008 and a persistent rise from 2010.



**Figure 4.1: Trends in ODA, FDI and Economic Growth in Ghana**

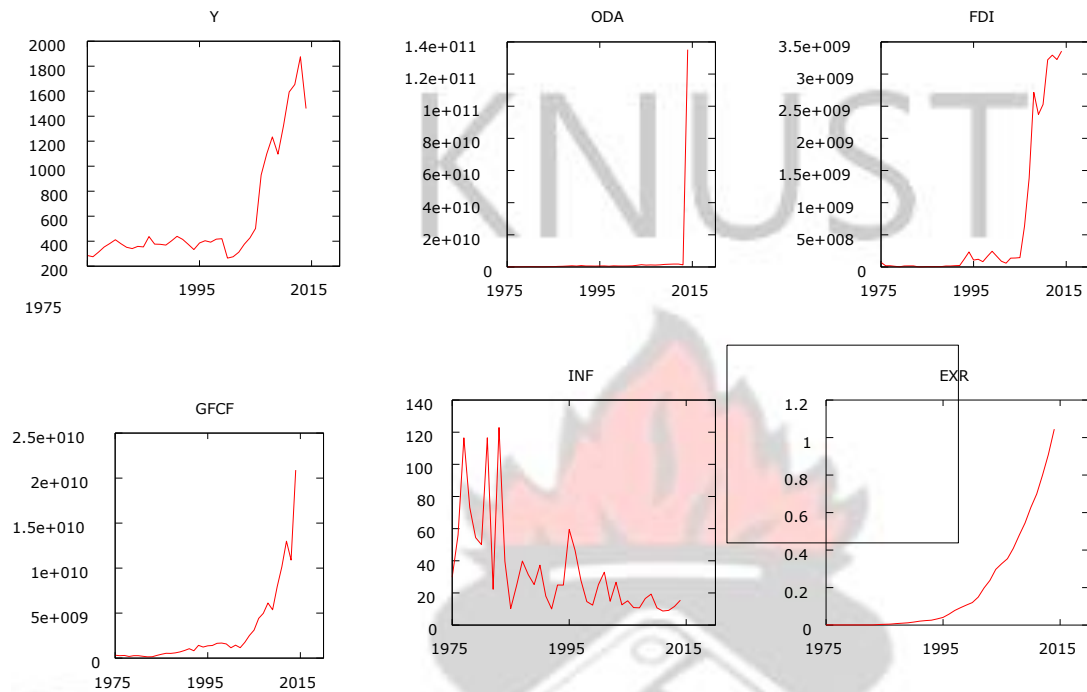


**Source: OECD and WDI (2015)**

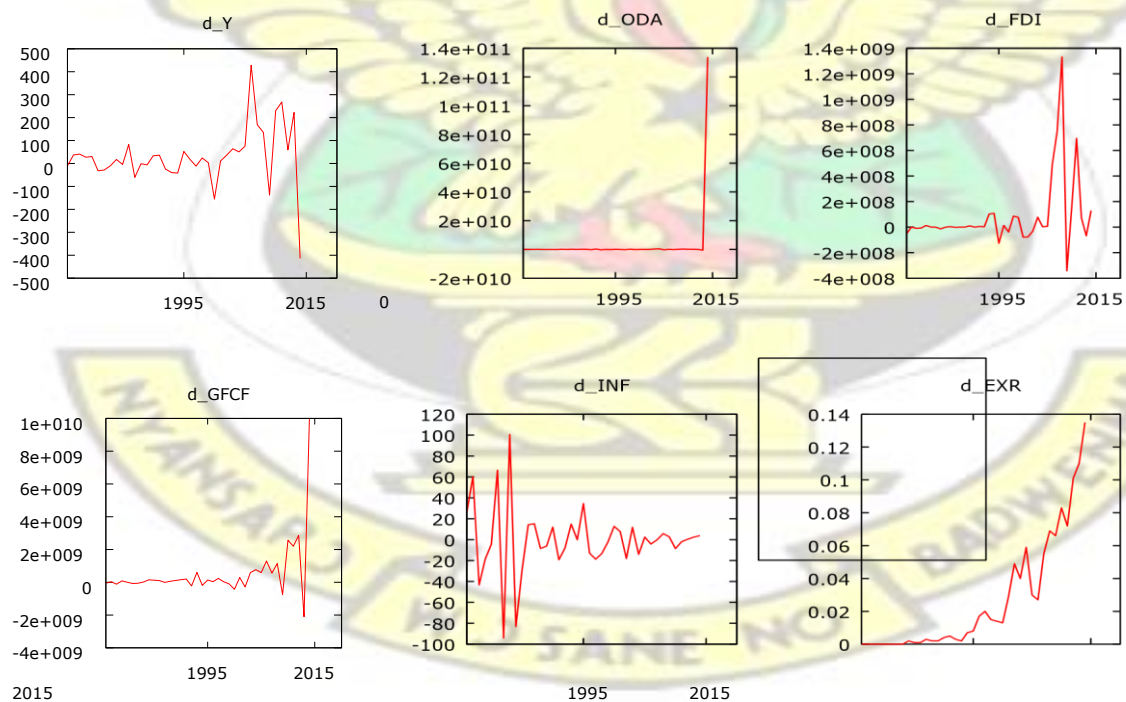
### 4.3 Results of the Unit Root Test

As explained in the preceding chapter, the series in the study have to be tested to ascertain their order of integration. Informally therefore, the series are plot in their levels as well as their first difference to aid a visual inspection. The plots of the series are exhibited in figures 4.2 and 4.3 below. As indicated in figure 4.2, ODA, FDI, gross fixed capital formation (GFCF) and exchange rate generally exhibit an upward trend, thus giving an impression of non-stationarity, while inflation and real GDP per capita appears to be stationary looking at its frequent trend, though the later exhibits a fairly fluctuating trend. Thus almost all the series suggest the presence of unit root. Consequently, the series are plot at their first difference as illustrated in Figure 4.3.

**Figure 4.2: Plot of the Variables in their Logarithmic form**



**Figure 4.3: Plot of the Variables in their First Difference**



However, the graphical examination of the series can be misleading; hence, it is important to use formal test to ascertain the order of integration of the variables.

**Table 4.1: Unit Root Test Results**

**Panel 1: Level**

Variable	Dickey Fuller-Generalized Least Squares (DF-GLS)	
	Constant No Trend	Constant Trend
Date Period: 1975 - 2014		
	-0.436311	-1.42252
	-1.66726*	-1.34881
	0.29244	-1.04691
	3.86005	0.319316
	0.835859	-0.452795
	-2.33634**	-3.6198 ***
	1.49734	-1.40296

**Panel 2: First Difference**

Variable	Dickey Fuller-Generalized Least Squares (DF-GLS)	
	Constant No Trend	Constant Trend
	-2.76557 (1)***	-2.3144 I(1)***
	-0.8970 I(1)***	-1.4823 I(1)***
	-1.91545 I(1)**	-3.0131 I(1)**
	-1.5631 I(1)*	-0.4952 I(1)***
	-3.1417 I(1)***	-0.5990 I(1)***
	-1.91545 I(1)**	-3.0131 I(1)***
	-2.76582 I(1)***	-3.2594 I(1)***

---

*Note:  $I(1)$  denotes integration of order one, and \*, \*\*, and \*\*\* denote 1%, 5% and 10% respectively. The null hypothesis for the ADF is nonstationarity and DF-GLS is stationary.*

---

The results of the unit root are illustrative in Table 4.1. As indicated in the table, all the series (except inflation), are non-stationary in their levels. However, all the variables showed stationarity in their first difference, according to the Dickey Fuller-Generalized Least Squares (DF-GLS). Therefore, the series is integrated at order one,  $I(1)$ , excluding the rate of inflation which was  $I(0)$ , as depicted in table 4.1 below.

#### 4.4 Results of the Cointegration Test (Johansen Approach)

As explained in the preceding chapter, the study proceeds with the Johansen multivariate cointegration test having established that all the series, except the rate of inflation, are integrated of the same order,  $I(1)$ . Panel 1 of the table presents the results based on the trace test to determine the number of co-integrating vectors (r) for this specification while Panel 2 presents the results based on the maximum eigen-value test to also determine the number of cointegrating vectors.

**Table 4.2 Estimated Long Run Coefficients of the Johansen Cointegration Test Panel**

<b>1: Trace Test</b>		<b>40 Observation Sample 1975-2014 Maximum</b>		
	<b>Likelihood ratio</b>	<b>Eigen value</b>	<b>Trace statistic</b>	<b>5%Critical value rank</b>
r = 0*	-47.262883	-----	43.1382	29.68
r = 1	-32.50024	0.56983	13.6129	15.41
r = 2*	-28.139453	0.22057	4.8914	3.76
r = 3	-25.693777	0.13043		



## Panel 2: Maximum Eigen Value Test

Maximum Rank	Likelihood ratio	Eigen value	Maximum Eigen value	5%Critical value
$r = 0^*$	-47.262883	29.5253	20.97	$r = 1^*$
	-28.139453	0.22057	4.8914	3.76
$r = 3$	-25.693777	0.13043		

*r indicates the number of co-integrating vectors. \*denotes rejection of null hypothesis at 5% significance level. Probability\*\* are obtained from Mackinnon- Haug-Michelis (1999)*

### Source: Author's Estimation

In the trace test, the coefficients for the null hypothesis of no cointegration ( $r = 0$ , and  $r = 2$ ) are 43.1382 and 4.8914 respectively; which are greater than their critical values of 29.68 and 3.76 at the 5% significance level, respectively. Therefore, the null hypothesis of no cointegration is rejected. Hence, the test shows that there are two cointegrating vectors, therefore, there exist positive cointegrating relationship among real GDP per capita growth, ODA and FDI.

The Maximum Eigen value test reinforces the fact that cointegrating relationship exists between real GDP per capita growth, ODA and FDI. Similar to the result obtained in the trace test, only rank 1 could not pass the 5% significant level. Therefore, the null hypothesis of no cointegration in rank 0 and 2 is rejected. This result provides additional evidence in favor of the above conclusion that there exists cointegrating relationship among the three variables under consideration.

The results in both panel 1 (the trace test) and 2 (maximum eigen-value) reveals positive coefficients, hence, there is a positive long run relationship between real GDP per capita, official development assistance and foreign direct investment in Ghana.

The results further imply that official development assistance and foreign direct investment maintain stable long run equilibrium with real GDP per capita (economic growth) throughout the period of the study.

Since both test statistics reveal the presence of cointegration among the variables in the long run, the long run effect of ODA and FDI on economic growth is estimated.

#### 4.5 Results of the Long Run Cointegration Relationship (Fully Modified-OLS)

Since the results of the Johansen cointegration approach indicated the presence of long run equilibrium relationship, the FM-OLS was used to estimate the long run effects of ODA and FDI on economic growth. The optimal lag length was obtained using the vlag (lag of VAR model). The coefficients are long run elasticities.

**Table 4.3 Estimated Coefficients of the Long Run Cointegration Regression**

Dependent Variable:			
Regressor	Coefficient	Standard Error	t-Statistics
	-0.1923933***	0.0439576	-4.38
	0.0459172	0.0326997	1.40
	-0.5881989***	0.0938404	-6.27
	0.9419261***	0.1020931	9.23
40 Observations Sample 1975-2014			
<i>lnGFCF</i>			
<i>lnEXR</i>	-0.2499357***	.0442295	-5.65
<i>lnINF</i>	-.098956*	0.0562176	-1.76
Constant	-9.556292***	1.675082	-5.70

---

Long run S.E.= 0.1615916     $R^2 = 0.840162$      $\bar{R}^2 = 0.7726923$     Bandwith(Andrews)= 1.4601

---

\*, \*\*, and \*\*\* denote 1%, 5% and 10% respectively.

---

**Source: Author's Estimation**

The results indicate that ODA has statistically significant negative effect on economic growth in the long run; as depicted in table 4.3 above. A 1 percent increase in ODA inflows will cause economic growth to fall by 0.19 percent. This contradicts theoretical expectation of the growth effect of ODA, especially for developing countries. During the past decade, ODA inflows has tend to be relatively stable due to the increased commitment of donor countries to meet the 0.7 percent of GNI set by the Pearson Commission towards the achievement of the Millennium Development Goals. However, ODA inflows affect growth when the government of the recipient country put into judicious use. Gourinchas and Jeanne (2008) add up to this by stating that countries that have enjoyed substantial amount of development assistance flows over the years remain the poorest.

The results also indicate a statistically insignificant positive effect of FDI on economic growth in the long run. Evaluating at the average, a 1 percent increase in FDI inflows will cause economic growth to increase by approximately 0.046 percent. The positive sign, however, corroborates theoretical expectation of the growth-effect of FDI. The reason for this occurrence is as a result of the unstable economic climate that the country experienced during the last decade. The freefall of the domestic currency (Cedi) along with unstable inflation rate and the erratic nature of power supply are but a few of the factors that Multinational Corporations (MNCs) consider before engaging in FDI.

The rate of inflation depicted a statistically significant negative effect on economic growth. This corroborates theoretical expectations since an increase in the rate of inflation reduces the purchasing power of the agents of the economy.

Exchange rate also depicted statistically significant negative effect on economic growth. This also corroborates theoretical expectations since a reduction in the value of the domestic currency in an import-driven economy like Ghana increases demands that more the Cedi is exchanged for the same amount of goods and services previously purchased.

The gross fixed capital formation showed a positive growth-effect. This corroborates theoretical expectation since an increase in capital increases growth in the Solow model.

Gross domestic savings depicted a statistically significant negative effect on economic growth. However, the result contradicts theoretical expectation of a positive growth-effect of domestic savings and this is accounted for by the predominantly low savings rate in the country. For savings to be able to affect growth, it must fund investment within the economy so as to increase growth. Shin and Shin (1998) found similar result of a negative growth-effect of domestic savings for Mexico.

The coefficient of the  $R^2$  also gives an indication of a good fit since 84 percent of the variation in economic growth is jointly explained by changes in ODA and FDI inflows.



#### 4.6 Model Diagnostics and Goodness of Fit

After estimating the regression model, a series of diagnostic tests were conducted to check if the model does not suffer from heteroskedasticity, serial correlation, normality of residual and multicollinearity. These diagnostics were performed to check the robustness of the model.

**Table 4.4: Model Diagnostics and Goodness of Fit for the Regression Model**

Model Criteria/Goodness of Fit				
R-Squared	0.764192	R-Bar-Squared	0.756773	
S.E. of Residual	3.85719	F( 7, 33) = 4.08418	P-value	0.0025
of Dependent Variable	1.18928	S.D. of Dependent Variable	4.69518	Mean
Residual Sum of Squares	490.971	Equation Log-likelihood	-106.908	
DW-statistic	1.23754			

Diagnostics	Test Statistic
( )	7.040052 [0.0125]
$\chi^2_{Auto}(1)$	7.87075 [0.00502]
$\chi^2_{Reset}(1)$	25.309760 [3.04e-007]
$\chi^2_{Norm}(2)$	20.73851 [0.02543]
$\chi^2_{White}(1)$	20.531182 [0.029082]

$\chi^2_{Auto}$  ,  $\chi^2_{Reset}$  ,  $\chi^2_{Norm}$  and  $\chi^2_{White}$  are Lagrange multiplier statistics for test of serial correlation, functional form misspecification, non-normal errors and heteroskedasticity, respectively. These statistics are distributed as Chi-square values with degree of freedom in parentheses. Values in parentheses [ ] are probability values.

#### Source: Author's Estimation

The result of the diagnostic tests indicates that the regression model passed all the tests. The coefficient of determination improved significantly and shows that approximately 76 percent of the variation in economic growth is explained by the predictors (ODA, FDI, gross fixed capital formation, exchange rate, inflation and labour stock).

#### 4.7 Results of the Fiscal Response Model

The effect of official development assistance (ODA) is presented in table 4.5 below. The figures in parenthesis are standard errors of the respective coefficients.

**Table 4.5: SUR Estimated Coefficients of the ODA Fiscal response**

	-0.0215677 (0.0316183)	0.1950962*** (0.064898)	0.0516978 (0.0427705)
$\ln T_t$	0.3176709*** (0.1435591)	0.1667306 (0.2946615)	-0.0831829 (0.194194)
$\ln ToT_t$	0.2243862 (0.1423031)	0.639228** (0.2920836)	0.4198363** (0.192495)
$\ln INF_t$	0.1559736*** (0.0475002)	-0.1146752 (0.0974962)	-0.0612431 (0.064254)
$\ln EXR_t$	0.0654643 (0.0589243)	0.136696 (0.1209448)	-0.0562326 (0.0797076)
$\ln S_t$	-0.1059097 (0.080719)	0.0599798 (0.1656793)	-0.0815655 (0.1091895)
$\ln GDP_t$	-0.1054016 -0.0513691 -0.3239877** (0.1070086)	(0.2196399)	(0.1447517)
	1.037963 (1.049382)	12.54204*** (2.153904)	-0.6164188 (1.419511)
	0.8702	0.9656	0.6416

\*\*\* denotes 1%, 5% and 10% significance levels

**Source: Author's Estimation**

The results show that official development assistance is a statistically significant positive driver of public investment spending. Thus, a 1 percent increase in official development assistance will cause public investment spending to increase by approximately 0.20 percent; which is less than the

average 7 percent of GDP, as stated by Morrissey (2012). Also the overall explanatory power is very high since ODA inflows in Ghana jointly (with other variables) explain approximately 97 percent of the variation in public investment spending. This is consistent with donors targeting public investment to the extent of financing recurrent costs in construction of roads and bridges, pipe-borne water etc.

However, ODA's correlation with public consumption spending is not well established. In other words, ODA is insignificant in explaining public consumption spending. This is because about 70 percent of general government revenue is allocated to public consumption spending in Ghana (MOFEP, 2015), therefore the chunk of revenue raised domestically are used to finance these expenditures without over-depending on external capital flows. Here, the explanatory power is relatively low. Official development assistance is also seen as an insignificant driver of total public spending. This can be attributed to the steady decline in development assistance inflows to the country, especially during the early parts of the 80s and 90s.

From the results, domestic tax revenue is a significant driver of total public spending. Thus, when evaluating at the means, a percentage increase in tax revenue will cause approximately 32 percent increase in total public spending. The overall explanatory power (87 percent) alongside huge coefficient value gives an indication that domestic tax revenue is a major source of total public spending in Ghana; contrary to the notion that developing countries' total public spending is over-dependent on development assistance.

Trade openness is also seen as a statistically significant positive driver of public investment spending and public consumption spending. Therefore, trade liberalization policy of the country is bearing fruit.

The rate of inflation showed a statistically significant positive relationship with total public spending but insignificant negative relationship with public investment and consumption spending. Thus, only total public spending is irresponsive to the rate of inflation in Ghana.

Implied PPP conversion rate (exchange rate) showed statistically insignificant positive relationship with total public spending and public investment spending and negative relationship with public consumption spending. This is in-line with theory since an increase in exchange rate reduces the purchasing power of the government. Therefore, the government would exchange more of its local currency in order to acquire the usual amount of goods and services.

The gross national savings as well as gross domestic product showed statistically insignificant relationships with all three categories of public spending. Gross national savings, however, depicted positive relationship with only public investment spending.

Also, the model passed the Breusch-Pagan test of independence; hence, the correlations of the estimated residuals in total public spending, public investment spending and public consumption spending equations are 0.2233 and 0.1620, implying that the hypothesis of presence of correlation is rejected.



In conclusion, public investment spending has a strong and significant response to official development assistance inflows. Thus, public investment spending increases as ODA increases in Ghana. However, World Bank (1998) asserts that ODA fiscal response results in two fiscal effects in the domestic economy. Thus, if ODA inflows are not allocated to the productive sectors of the economy, the effectiveness of ODA will be lowered. Also, the consistent increase in ODA inflows has the propensity to lower tax revenue which may crowd out private investment due to the persistent desire of the government to raise public sector borrowing requirement. Therefore, section 4.7.1 estimates the effect of ODA inflows on domestic tax revenue in order to ascertain the moral hazard behavior of the government on tax efforts.

#### 4.7.1 The Effect of Official Development Assistance on Tax Effort

The results in the table below show that official development assistance (ODA) has statistically insignificant positive relationship with domestic tax revenue. Thus, ODA has no significant effect on the domestic tax revenue of Ghana. However, the positive sign is an indication that an increase in ODA inflows does not affect the tax efforts of the country; hence the government may increase tax even in the midst of increase in ODA inflows.

**Table 4.6 SUR Estimated Coefficients of ODA Effect on Domestic Tax Revenue**

Dependent variable: 40 observations used for estimation from 1980-2014

	0.0108855	0.0435558	0.25
	0.3836029**	0.1476605	2.60
	-0.055424	0.1020054	-0.54
	0.0317923	0.051224	0.62

Regressor	Coefficient	Standard Error	T-Ratio
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Constant	2.212215	1.419387	1.56
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$F(16.78) = 0.0000$	Root MSE = 0.1892062	= 0.8187
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**Source: Author's Estimation**

Private investment, GDP, FDI, inflation rate and implied PPP conversion rate are also statistically insignificantly related to domestic tax revenue while gross national savings showed a positive statistically significant relationship with domestic tax revenue at the 5% significance level. This is a true reflection of the current state of the Ghanaian economy since savings is one of the avenues that the government raises funds (tax on bank transactions).

However, the negative relationship between GDP and domestic tax revenue is as a result of the high incidence of tax evasion in the country which results in an insignificant effect of GDP on domestic tax revenue.

In conclusion, though the response effect of ODA is strong in public investment spending in

Ghana, its effect is not felt on the domestic tax revenue of the country since ODA does not significantly affect tax efforts of the country; a contradiction to the assertion of World Bank

(1998).

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## CHAPTER FIVE

### SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

## 5.1 Introduction

This is the final chapter of the study and it deals with summary of findings, conclusion and recommendations. It also outlines some of the limitations of the study and suggests future areas of research on the subject matter.

## 5.2 Summary of Findings

The results of the Johansen cointegration test (both in the trace test and maximum eigen value) indicate that there is a positive long run equilibrium relationship between real GDP per capita (economic growth), official development assistance and foreign direct investment in Ghana. Also, the result revealed that ODA and FDI maintain stable long run equilibrium with economic growth throughout the study period.

The results of the long run FM-OLS showed a statistically significant negative effect of ODA on economic growth. However, this contradicts theoretical expectation of the growth-effect of ODA, especially for a developing country like Ghana.

Also, the results depicted a statistically insignificant positive effect of FDI on economic growth in the long run. Though, the sign of the coefficient is in-line with theory, it was found to be statistically insignificant. Therefore, there is a significant negative relationship between ODA and economic growth while a positive insignificant relationship exists between FDI and economic growth in the long run.

The results of the fiscal response model revealed that public investment spending increases with increase in ODA inflows, hence the effectiveness of ODA would be much felt if these funds are channeled towards public investment activities. The result also revealed an insignificant effect of ODA on public consumption spending. This is because ODA inflows are mostly targeted towards



increasing infrastructural development. The study further revealed that ODA is an insignificant driver of total public spending. This can be attributed to the steady decline in development assistance inflows to the country, especially during the early parts of the 80s and 90s.

Domestic tax revenue depicted a significant effect on total public spending which indicates that the total public spending in Ghana is not over-dependent on donor-support funds.

However, a positive fiscal response effect of ODA in public investment spending implies that an increase in ODA inflows would lower domestic tax effort and may crowd out private investment. Therefore, the moral hazard behavior of the government was examined and the result indicated that ODA inflows have no significant effect on domestic tax revenue of Ghana. Therefore, the government of Ghana's moral obligation to allow domestic firms access to funds in order to expand is not affected.

### **5.3 Conclusion**

This study examined the effect of official development assistance and foreign direct investment on economic growth for data period that spans from 1975 to 2014. Specifically, the study looked at how to finance growth in the long run by adopting the Johansen cointegration approach after the series was integrated of order one,  $I(1)$  to test for the presence of cointegrating relationship in the long run. The study further examined the long run effect of ODA and FDI on economic growth using the fully modified ordinary least squares (FM-OLS) method. The statistically significant negative effect of ODA on growth is a wakeup call to the government of Ghana to put into judicious use the development assistance inflows so as to realize its effect on economic growth. Also, prudent measures must be implemented in order to attract the efficient-seeking type of FDI that will promote growth of the Ghanaian economy.

Furthermore, the study examined the fiscal response of ODA inflows in Ghana as well as the moral hazard behavior of government towards tax efforts by using data span from 1980 to 2014. Since ODA does not increase growth in Ghana, it is prudent for policy makers to implement monetary policies that aim at effective control of domestic funds as well as stabilization policies for smooth economic activities in the country. Also, the government should prioritize public investment spending so that the country will realize the true effectiveness of development assistance inflows since an increase in ODA increases public investment spending.

#### **5.4 Policy Implications**

The results of this study provide very useful information for policy decisions in Ghana. The negative relationship between ODA and economic growth in Ghana gives an indication that over-dependency on ODA inflows is unhealthy for the growth of the economy and that increase in ODA inflows has the propensity of lowering the productivity level of the country, hence the need for the government to seek for alternative source of financing growth in the long run. Foreign direct investment inflows, on the other hand, show no significant growth effect. This is due to the type of FDI inflows in the country. Policy makers must formulate policies that aim at attracting efficient-seeking type of FDI that will raise technological and managerial know-how in order to increase the gross fixed capital formation of the country since GCF has a significant positive effect on economic growth.

With respect to the results of the fiscal response effect of ODA, the government of Ghana must put into judicious use the donor-support funds (ODA) in order to realize its true effect on the

infrastructural development of the country since ODA has significant effect on public investment spending. Tax efforts should be assessed properly and effectively used so as to affect growth positively since it contributes significantly to total public spending. Furthermore, the government must encourage domestic savings since it can earn more funds (through taxes) to support public expenditures as well as make credit available to domestic firms, thus, avoiding crowding out.

This will go a long way to increase economic growth of Ghana.

### **5.5 Limitation of the Study**

The major limitation of this study is data quality and availability on most of the variables used as well as time and resource constraint. Since it was practically impossible to acquire data on domestic borrowing from any of the various government agencies, the variable had to be taken out of the fiscal response model though it is very vital to the analysis. Also, data on variables such as domestic tax revenue and gross national savings limited the fiscal response analysis to span from 1980. Perhaps, in future when data is made available on these variables, especially domestic borrowing, the ODA fiscal response analysis for Ghana can be extended to include it. Also, due to the inability of developing countries, especially Ghana, to raise enough capital on their own to affect growth, there is the over-dependency on external capital flows. However, this study did not examine the mechanisms needed to raise substantial amount of capital domestically to finance growth, hence there is the need for further research into this topic. Furthermore, a sectoral fiscal response analysis can be conducted so as to reveal the effectiveness of ODA inflows in the various sectors (health and education or agriculture and services) of the Ghanaian economy.

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