



Ashesi University College

Is Foreign Aid Procyclical or Countercyclical? A Focus on Ghana & Zambia

By

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**DECLARATION**

I hereby declare that this thesis is my original work and that no part of it has been presented for another degree in this university or elsewhere.

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## ABSTRACT

The question of whether foreign aid stimulates economic development still attracts intense debate. This perennial debate has been given fresh life due to the recent election of some of Africa's more impactful leaders like Nana Akuffo Addo of Ghana who seems bent on wearing Ghana off aid. Akuffo Addo's "Ghana Beyond Aid" agenda is interesting because historically, while some scholars have a benign view of aid, others accuse foreign aid of being responsible for Africa's developmental challenges. This research investigated whether foreign aid is procyclical or countercyclical. The research also tried to confirm whether aid is growth promoting or growth retarding with the most recent data.

Focusing on Ghana and Zambia, data on foreign aid and real GDP was obtained from the World Bank, the OECD and the IMF from 1960 to 2015, a 56-year period. The diagrammatic and correlational analysis revealed that multilateral aid is countercyclical for Ghana and Zambia, while there exists almost no relationship between bilateral aid and real GDP for Ghana and Zambia. When real GDP is lagged and lead one year, the result suggested that a poor performance in the previous year influences more aid in both countries, nevertheless, this makes them worse the following year. Again, the multiple regression output revealed a negative and statistically insignificant relationship between multilateral aid and real GDP for both countries.

Since the results suggest that foreign aid is transferred to Ghana and Zambia when they are struggling, but the receipt of the aid stagnates growth, it is recommended that these two countries focus less on aid as a means for growth. In support of Akuffo Addo's "Ghana Beyond Aid" agenda, Ghana and Zambia must look to control their own destiny and rely on other means other than aid, such as trade, for improving their economies.

*Keywords:* Foreign aid, economic growth, procyclical, countercyclical

**LIST OF ACRONYMS**

<b>Acronym</b>	<b>Meaning</b>
SSA	Sub-Saharan Africa
OECD	Organization for Economic Co-operation and Development
GDP	Gross Domestic Product
GNI	Gross National Income
ODA	Official Development Assistance
DAC	Development Assistance Committee
IFS	International Financial Statistics
FDI	Foreign Direct Investment

**DEFINITION OF TERMS**

Foreign Aid: Foreign aid is also known as Official Development Assistance by the OECD. They are facilities provided either bilaterally, from donor to the recipient or multilaterally through a development agency such as the United Nations (OECD, 2016).

Economic Growth: Economic growth is measured as an increase in the economy's wealth such as an increase in GDP.

Procylical: A variable is said to be procylical when it moves in the same direction as the economy. The variable increases in value when the economy grows and vice versa.

Countercyclical: A variable is said to be countercyclical when it moves in the opposite direction with the economy. The variable decreases when the economy improves and vice versa.

Middle-income country: According to the World Bank, middle-income countries are those that have a gross national income per capita of \$1,026 to \$12,475.

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## CHAPTER 1: INTRODUCTION

### Background

Historically, the desire to spur growth in developing countries has been one of the greatest concerns in relation to development. In fact, according to the Nobel Laureate, Robert Lucas Jr, “when one starts talking about growth, it’s difficult to talk about anything else” (The Economist, 2010). The economic growth question remains pertinent especially when currently, 10.7 percent of the world’s population lives on less than US\$1.90 a day (World Bank, 2016).

The case in Africa is especially compelling because it is the worst performing region in the world (Moghalu, 2014). As affirmed by the World Bank, “half of the extremely poor live in sub-Saharan Africa” (World Bank, 2016). Further, despite very recent gains in poverty reduction in Asian countries like India and China, Africa’s performance regarding growth and poverty reduction has not been the best (World Bank, 2016). This is so because, whereas about half of the world’s poor lived in East Asia in 1990, poverty has reduced drastically to about 9.3% today. In comparison, the African continent consists of about 41% poor people (Matthews, 2016). Figure 1 below clearly shows that the East Asia and Pacific region are growing steadily as compared to the sub-Saharan Africa region. Sub-Saharan African countries like Ghana and Zambia, perform slightly better than the average African performance but their struggle is not different from the rest of SSA. This research compares Ghana to Zambia and focuses on these two countries as best scenario cases for SSA. The comparison is made because they are similar along several dimensions: They both have a stellar record of political stability with no wars recorded in their history; they both contain many tribes and suffer from the consequence of tribalism and associated corruption, and both are resource-rich and have received copious amounts of aid over time.

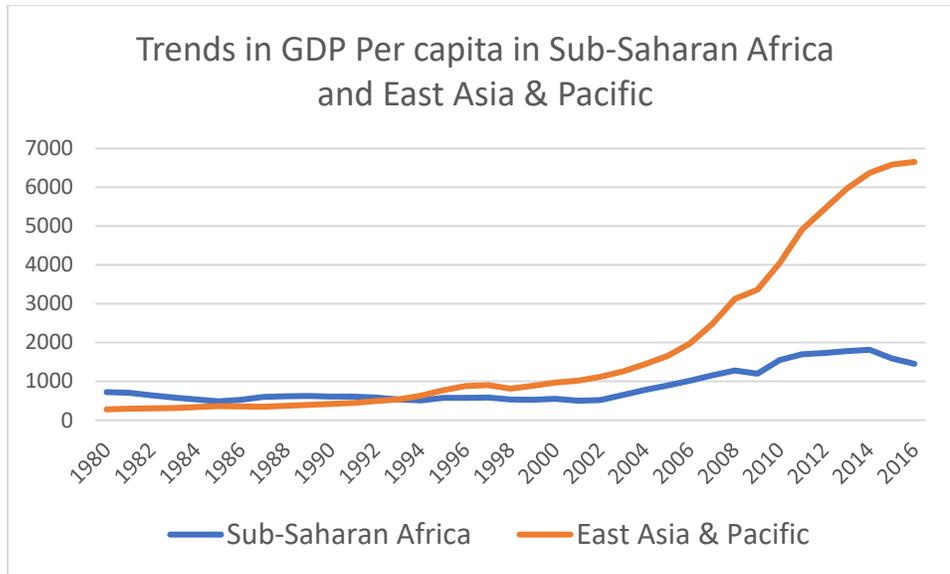


Figure 1: Graph showing GDP Per capita for Sub-Saharan Africa and East Asia countries

Ghana can be found in the West Africa region and has a population of about 28million people (World Bank, 2017). Even though agriculture was historically the main driver of the economy with the country being the second largest producer of cocoa in the world (United Nations, 2010), today, the service sector is the largest sector in Ghana contributing about 54.1% to GDP in 2015 (Ghana Statistical Services, 2015). Ghana was declared a middle-income country in 2011 according to the World Bank. Over the past decade, Ghana's economic performance has been remarkable, even if her recent performance is only now bouncing back after a few years of lackluster growth. The poverty rate was cut in half from 52.6% to 21.4% between 1991 and 2012 (World Bank, 2015). GDP growth in the country averaged between 4-5% in the 1990s and nearly 8% in 2006 (World Bank, 2015). The World Bank declared Ghana as the fastest growing economy in 2018 with a forecasted growth rate of 8.3% (McDonnell, 2018). The nation is endowed with natural resources such as gold, bauxite, diamond, and oil. The country is also politically stable and is known to be one of the most peaceful countries in the world (Armah, 2016).

Nonetheless, with a literacy rate of 71.5% and GINI coefficient of 42.8, economic problems such as illiteracy and income inequality still cripple the country. The 2016 corruption index by Transparency International revealed that corruption is prevalent in the country as Ghana scored 43/100 and was ranked the 70<sup>th</sup> most corrupt country out of 176 countries. Proximal countries to Ghana such as Cote d'Ivoire was ranked 108<sup>th</sup>, Nigeria ranked 136<sup>th</sup> and Benin, 95<sup>th</sup> indicating that Ghana performs comparatively well regionally and that corruption is a canker in sub-Saharan Africa (Transparency International, 2016). Because of the income disparity in Ghana, the World Bank recognizes that the "challenge is to ensure that prosperity is shared across the entire population" (World Bank, 2015).

Zambia is located in the southern part of Africa and has a population of about 13 million (OECD, 2011). Similar to Ghana, Zambia has attained a peaceful democratic environment since independence in 1964 (UNDP, 2010). The country has relied strongly on the abundance of copper as a natural resource which also contributes about 70% of export revenue (World Bank, 2016). As a result, the Zambian economy stumbled when the world price of copper started to decline in 1973. This accounted for the transition of the nation from middle-income to low-income country (UNDP, 2010). With the nation's GNI reaching US\$1070 per capita in 2010, Zambia was reclassified as a middle-income country in 2011 (OECD, 2011). In 2016, the country's GDP per capita was reported as \$1,178.39 by the World Bank.

Ghana is one of the African countries which is dependent on aid to an extent and relies heavily on aid specifically for infrastructural projects. With an annual increase of aid by 23% from 2001 to 2008, aid inflows in Ghana increased from US\$578million in 2002 to US\$1.4billion in 2008. In 2015, Ghana received an amount of US\$1.7billion in official development assistance, indicating that the country still receives lots of aid (United Nations,

2010). Likewise, in 2002 Zambia was recognized as one of the highly indebted poor countries because of its dependence on aid (United Nations, 2002). In 2009, it received a total of US\$1.3 billion in aid (OECD, 2011). Presently, the country's receipt of aid has declined. According to the World Bank, Zambia received a total of US\$797 million in aid in 2015 (OECD, 2016). Even though both countries rely to some extent on aid as a means to spur growth, the aid is declining and will likely continue to decline as they have both attained lower middle-income status. Table 1 below shows the GDP, official aid received and its percentage of GDP for both countries in 2015.

Table 1

*GDP and Aid flows for Ghana and Zambia*

Country	GDP	Official Development Assistance	Net ODA per capita
Ghana	US\$ 42.69 billion	US\$ 1.768 billion	4.14%
Zambia	US\$ 19.55 billion	US\$ 797 million	4.08%

Although there is debate in the economic literature that strong growth over a sustained period promotes development and reduces poverty, there remains some uncertainty (Burnside & Dollar, 2000; Easterly, 2003; Islam, 2005; Collier, 2007; Easterly, 2006; Moyo, 2009; Armah, 2010). This is because, as explained by Todaro (2015), economic growth measures an increase in output and income which is measured by GDP and GDP per capita (Todaro & Smith, 2015). However, increase in income can, and often, does co-exist with income inequality, poverty, and unemployment. This shows that an increase in income is not a sufficient measure of development. Economic development is a broader concept than growth because it also addresses poverty, unemployment, educational attainment, access to health service and inequality (Todaro

& Smith, 2015). In discussions concerning the economy, it is hard to determine which indicator can contribute most significantly to the economic growth of countries who are stagnated in terms of economic development. One such indicator whose effect on growth still generates controversy is foreign aid.

Foreign aid is defined by the OECD, as Official Development Assistance (ODA) (OECD, 2016). Aid can either be given bilaterally, from a country to another country or multilaterally, through a development agency such as the World Bank (OECD, 2016). According to the OECD, the purpose of aid is to “promote economic development and welfare of developing countries” (OECD, 2016).

In discussions of foreign aid and its impact on the economic growth of countries, a controversial issue is whether aid positively affects growth or not (Armah, 2010). While some argue that the inflow of foreign aid is hurtful to the growth of countries, others contend that foreign aid contributes significantly to the growth of countries. On the one hand, Moyo (2009), a major opponent against aid, argues that even though over \$1 trillion has been transferred to African countries in the past 50 years to facilitate development, poverty levels continue to escalate with growth rate declining steadily. She posits that an overreliance on foreign aid by developing nations has led to market distortion, increased corruption, and further poverty which at the end leads to the need for more aid (Forbes, 2009). Sachs (2005) on the other hand argues for foreign aid and claims that the critics against aid are wrong. He believes that aid works and that aid-supported programs have helped to reduce death rates in many poor countries through health-care delivery programs (Sachs, 2012).

Evidently, the aid-growth relationship has been debated for a long time. Burnside and Dollar (2000) for instance found out that “foreign aid has a positive impact on growth in

developing countries with good fiscal, monetary and trade policies” (Burnside & Dollar, 2000). Conversely, Hansen and Tarp (2000) argue that there exists a positive relationship which is not conditional on good policy. Rajan and Subramanian (2008) also assert in their paper that there is little evidence of either a positive or negative relationship between the inflow of foreign aid and economic growth.

The fact that remains is, whether foreign aid is beneficial or not to the growth of countries, some countries continue to receive aid irrespective of their growth levels. The main purpose of aid is to stimulate economic growth because it “supplements domestic sources of finance such as savings, thus increasing the amount of investment and capital stock” (Ekanayake & Chatrna, 2010).

Regardless of the purpose of receiving aid, certain countries who are performing strongly continue to receive aid even after their fortunes begin to improve. For example, Mauritius still relies on aid and continues to receive it even though its economy is performing strongly. In 2015, Mauritius grew at 3.7% and received \$76.6 million of aid which was 0.7% of its GNI (OECD, 2016). In contrast, other countries whose economies are declining also rely on aid. For example, the growth rate of South Sudan fell by 6.35% in 2015 and received \$1.67billion in aid which was 21% of its GNI (OECD, 2016). The volume of aid in some countries is very high in times of exogenous shocks such as natural disasters. Markandy, Ponczek, and Yi (2011) observe that the inflows of aid increased sharply in Mozambique in 2000 in response to the flooding and in response to the drought in Ethiopia in 2002. In the debt relief initiative by the World Bank, eligible countries for aid are those who show evidence of implementing sustained economic reform programs (Alesina & Weder, 2002). This shows that other countries also receive more aid because they have good policies and have a growing economy.

The debate on aid is intense and much research has been done on the topic. However, not much research has been done on a case by case basis to establish in retrospect whether a typical recipient actually receives aid when its economy was stalling or growing. This motivated this research as it seeks to find out whether countries receive more aid when their economy prospers (procyclical) or more aid when the economy is in peril (countercyclical) or whether there is no relationship between aid and economic performance so that aid is given randomly.

This study will focus on Ghana and Zambia and make a comparison between both countries. Secondary data would be collected from these countries to determine the pattern of aid. This is a quantitative study that employs econometric procedures to analyze the data. As discussed above, both countries are politically stable, they have natural resources, and they both receive aid. Hence, Ghana and Zambia similar and reasonable to compare. Figure 2 below shows Ghana and Zambia's receipts of foreign aid while figure 3 shows their GDP over a 30 year period. Figure 4 below represents the GDP per capita for both countries over the same period. Ghana and Zambia's GDP per capita have moved in the same direction, but Zambia has achieved a relatively higher income per capita in recent times.

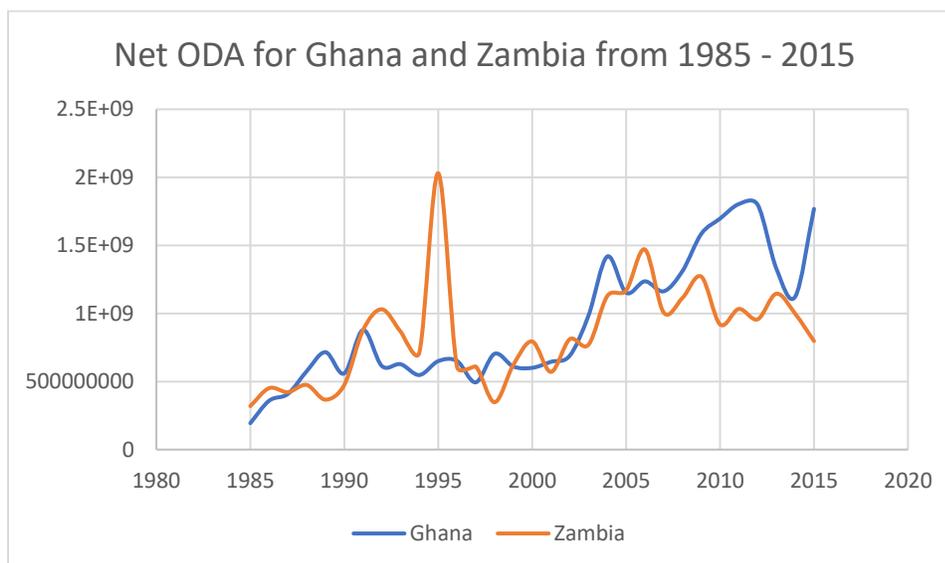


Figure 2: Graph showing NET ODA for Ghana and Zambia from 1985-2015

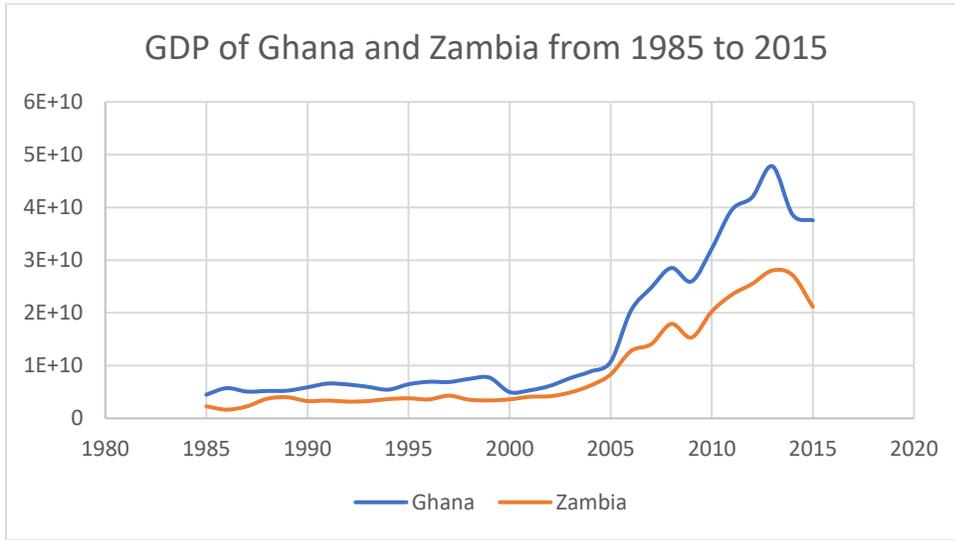


Figure 3: Graph showing GDP for Ghana and Zambia from 1985-2015

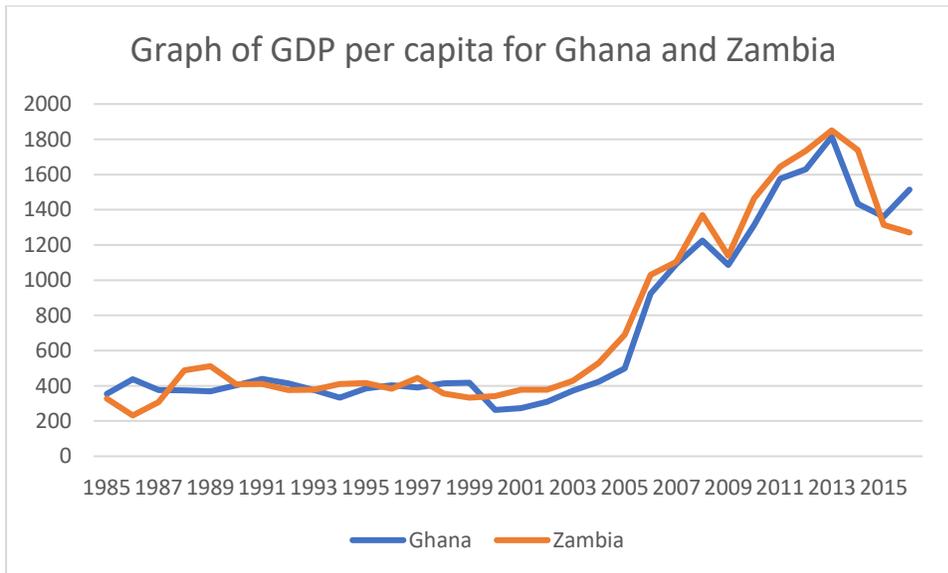


Figure 4: Graph of GDP per capita for Ghana and Zambia from 1985-2016

**Research Problem**

Poor countries desire to increase the well-being of their citizens and develop the economy. According to Todaro’s definition, development signifies a reduction in inequality and

poverty and increased employment which means that there is an improvement in the quality of life of the citizens (Todaro & Smith, 2015). To reduce the disparity in the well-being of people across countries, it is crucial that least developed countries improve their economy through better health care, improved educational systems, a boost of investment in agriculture, infrastructure and many more (Elliot, 2015). However, the income of least developed countries is not sufficient to provide for these amenities. As reported by Alesina and Weder (2002) “income per capita in the United States is 60 times larger than in Ethiopia and about 50 times larger than in Mali” (p.g 1126). This makes the concept of foreign aid critical in these countries. Foreign aid serves as a supplement to the income of least developed countries like Mali for economic activities and in time of crisis. As observed by Pallage and Robe (2001), foreign aid is a significant source of income to many African countries.

However, it is reasonable to expect that foreign aid should be countercyclical for developing countries: a country should receive more aid when the economy declines and less aid when the economy improves. This is because, as specified by the OECD, the purpose of aid is to stimulate economic growth. However, the reality is, even though some countries are experiencing steady growth, they continue to receive aid which may not be consistent with the original purpose of aid donation but may serve other strategic purposes for donors and recipients (Alesina & Dollar, 2000). From the graphs below, over the same period, South Africa which achieved a steady, albeit very low rate of growth over the period, receives a higher amount of aid when compared to Sierra Leone which is stagnating in growth. Although the aid received per capita may show a slightly different trend, the fact that South Africa is receiving aid itself is interesting. Hence, the problem this research seeks to address is to investigate whether a country receives more aid during its period of sustained growth or rather during periods of poor

economic performance. Since this research focuses on Ghana and Zambia specifically, the question is: is the receipt of foreign aid procyclical or countercyclical in Ghana and Zambia?

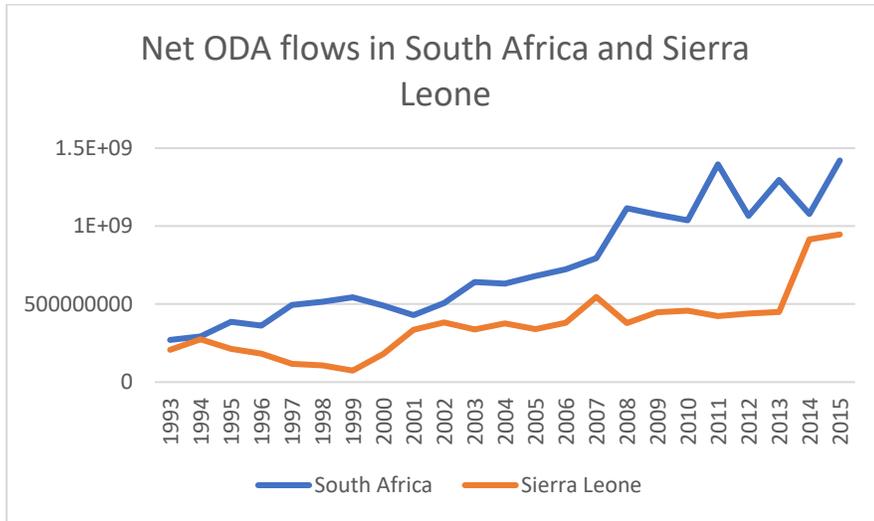


Figure 5: Graph showing net ODA flows in South Africa and Sierra Leone from 1993 to 2015

Data source: The World Bank

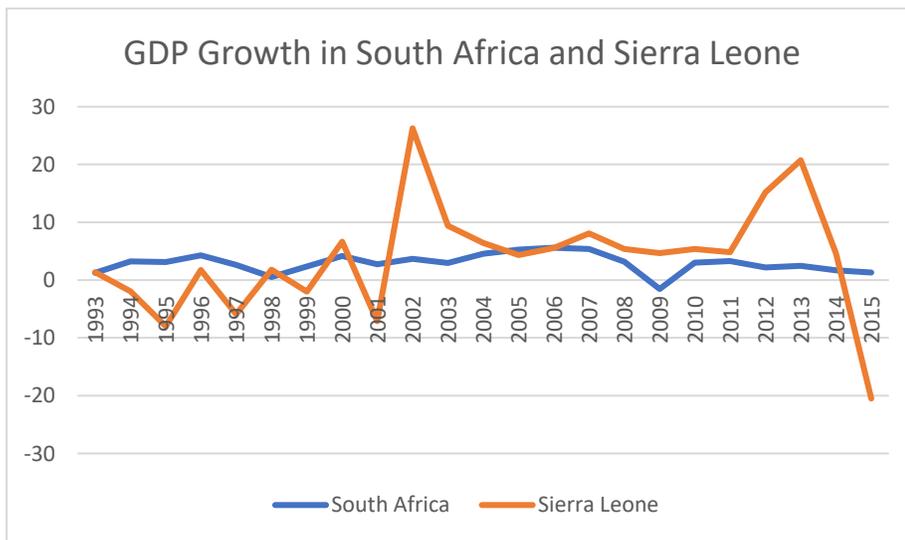


Figure 6: Graph showing GDP growth in South Africa and Sierra Leone from 1993 to 2015

Data source: The World Bank

**Research Question**

This research seeks to address the question:

- Is foreign aid procyclical or countercyclical for Ghana and Zambia and how should the research result inform development policy in Ghana and Zambia?

**Research Objective**

The underlying objective of this research is to investigate whether the volume of aid increases with economic growth or decreases with growth. Thus, this study will find out if any correlations exist between periods of sustained economic growth and foreign aid. Specifically, this research tends to achieve the following objective:

- To investigate whether foreign aid is procyclical or countercyclical for Ghana and Zambia and to recommend a development policy to policymakers in Ghana and Zambia.

**Research Relevance**

The concept of foreign aid and its impact on growth has been an area of concern to many economists. While some authors like Easterly (2001) and Moyo (2009) are skeptical of foreign aid's ability to spur growth, others such as Sachs (2005), Collier (2007) and Armah (2010) hold a more hopeful view for aid. However, it is not clear at what development level countries should stop relying on aid or stop their dependence on it in their quest for sustainable development. This makes it necessary to study the development level and aid profile of Ghana and Zambia to assess the optimal level at which aid will be relevant to induce economic progress. The research findings will, thus, make a useful contribution to the literature on aid.

The findings from this research will be significant to policymakers because they will have a clear expectation about trends in aid for planning purposes. If aid tends to decline as the

economy prospers and tends to increase in difficult times, then policymakers must have strategies not only to use aid to grow but to survive without aid once their fortunes begin to improve.

This research adds to the current discussions in the literature concerning the foreign aid-growth nexus by focusing specifically on Ghana and Zambia. Therefore, another stakeholder who will also find this research relevant is academia. This research will add to knowledge on the current aid-growth debate.

This research is also relevant because it would add to literature as little research has tried to establish the sign of the correlation between the volume of aid and economic growth specifically for Ghana and Zambia. Thus, concerned stakeholders in Ghana and Zambia would find this research meaningful as it would provide insights into the business cycle condition of aid in these countries. Finally, Sub-Saharan African countries receiving copious amounts of aid may find the results instructive.

### **Theoretical Framework**

Neoclassical models of economic growth suggest that the presence of physical capital contributes to the growth of poor countries (Todaro & Smith, 2015). For instance, neo-classical models such as the Solow (1960) and Harrod-Domar (1956) growth models explain that the savings ratio and the capital-output ratio determines GDP growth. The two-gap model developed by Chenery and Strout (1966) was an extension of the neo-classical growth models. It asserted that the presence of two gaps constrains growth in less developed economies. These are the savings gap and the foreign exchange gap (Todaro & Smith, 2015). There is a savings gap when there are insufficient savings to finance investment activities. Similarly, high importation leads to insufficient foreign exchange which leads to the second gap known as the foreign exchange gap.

Foreign direct investment is typically used to close these gaps. In the absence of sufficient FDI, the inflow of foreign aid can be used to close these gaps. The suggestion of the two-gap model forms the theoretical basis of the incorporation of foreign aid into the class of empirical models derived from the theoretical, neoclassical models. For example, the typical empirical models in the aid literature such as those employed by Burnside and Dollar (2000), Islam (2005) and Armah (2010) all belong to this class of models.

This, therefore, explains why many countries have resorted to foreign assistance from other countries and international organizations. As stated by Armah (2010), “aid promotes growth by augmenting the investment and foreign exchange needed for production and growth” (pg. 55).

It is therefore key to determine whether poor countries actually get aid when the economic performance in terms of overall GDP rises or falls. That is, do countries receive aid when they experience these two-gaps? The fluctuations in GDP in all likelihood is a reflection of performance in trade and savings. By identifying whether aid is procyclical or countercyclical, it can be determined if aid donation is consistent with the Hollis Chenery two-gap model or any of the other neo-classical models such as the Harrod-Domar (1956) model.

### **Scope of Study**

The scope of this research is restricted to the African countries of Ghana and Zambia within the population of SSA countries for a 56-year period. These countries will be compared to investigate the pattern of aid and growth of these countries. These countries are chosen because they are similar regarding their dependence on aid, their reliance on natural resources and how stable the economy is politically. However, because of the heterogeneity across countries, this study will not provide a generalization for all countries. This is because, the experiences of these

countries may be different from others. Hence, Ghana and Zambia will serve as case study countries in this research.

### **Organization of the Study**

There are five chapters in this study. The first one focuses on the introduction and provides the background of the study, research questions and objectives and the relevance of the study. Chapter two reviews scholarly articles in literature and critiques them to find gaps in previous studies. Chapter three outlines the method to be used in the study. This includes the data source, range and the empirical model to be used. Chapter four presents the findings and analysis of the study and chapter five concludes the research and provides recommendations.

## CHAPTER 2: LITERATURE REVIEW

### Overview

This chapter presents a critical analysis of the current discussions on foreign aid. Findings on the literature are further grouped under five sub-sections: definition and descriptions of foreign aid; foreign aid in retrospect; trends in aid; the current controversy on aid and lastly, a discussion on the business cycle conditions of foreign aid.

The literature review presents an overview of the origin and pattern of aid in poor countries. It further discusses the controversy underlying the aid-growth relationship, both for and against aid. Lastly, this chapter presents the findings on research done by other authors on whether aid is procyclical or countercyclical for certain countries. The review of the literature seeks to provide a synthesis of literature and to justify not only the gap in the current literature which this paper will fill but also justify the empirical procedures employed in the analysis.

### Definitions and Descriptions of Foreign Aid

The concept of foreign aid has historically attracted the most intense debates when it comes to the critical issue of development (Edwards, 2014). The Development Assistance Committee (DAC) of the OECD historically took up the responsibility for documenting aid data, aid-related projects and poverty reduction efforts (OECD, n.d.). Official Development Assistance (ODA) is OECD's measure of aid.

ODA includes bilateral grants, concessional loans, technical assistance and multilateral flows (Todaro & Smith, 2015; Pallage & Robe, 2001; Alesina & Dollar, 2000). However, ODA excludes grants and loans given for military purposes. Also, commercial loans, foreign direct investment, donations from the public and assistance by non-governmental organizations are not regarded as official development assistance (Tarp, 2009). There are different forms of grants

given to poor countries. However, a grant is considered as a foreign aid when it is non-commercial and is on concessional financial terms. This means that the repayment process and interest rate must be softer than the commercial terms (Todaro & Smith, 2015; Tarp, 2009). Lately, remittances from abroad, which is not considered as official development assistance have increased rapidly and serves as another source of finance for many developing countries. Most importantly, non-DAC countries such as the United Arab Emirates, Turkey, China, and Brazil have played an important role in providing development assistance for poorer countries. They are known as emerging source of development cooperation and they also contribute to official development assistance. Data gathered by the OECD revealed that these non-DAC countries contributed 15.8% to total ODA in 2015 (OECD, 2017).

Foreign aid can be transferred freely but may also come with certain economic and political conditions known in the aid literature as conditionalities. In some cases, foreign aid is tied, and the donors require that recipient countries pursue specific policies that promote development. For example, international agencies such as the World Bank requires that countries adopt the stabilization and structural adjustment condition (Tarp, 2009). Some of these policies include privatization of the public sector, liberalization of the economy and devaluation of the currency against the dollar (Shah, 2013). Regardless of the intention of giving aid, there have been controversies with some scholars arguing that those policies have rather caused a decline in growth.

Aid comes in different forms. Donors transfer aid for different purposes such as responding to humanitarian emergencies, supporting the building of infrastructure and expanding access to education. In some cases, aid may be given in the interest of donors rather than the

recipients. At other times too, former colonial links between donors and recipients are significant determinants of aid (McGillivray, 2003).

Alesina and Dollar (2000) uses data on bilateral flows and analyzes the behavior of bilateral flows in a variety of donors. They found evidence that aid is not effective in reducing poverty because colonial ties rather than economic policy of recipients explain most of the distribution pattern of aid. France, for instance, gives a higher amount of aid to its former colonies (Alesina & Dollar, 2000).

### **Foreign Aid in Retrospect**

The first major foreign aid program was conceived and administered by the United States in 1948 after World War II in response to the devastation that the war had caused in Europe. The affected countries included England, France, Germany, and Italy. After the war, most of these European countries lay in ruins; infrastructure was in shambles while the war had disrupted agricultural production. In effect, the economic system of European countries had collapsed. For instance, Germany had a population of 68,558,000 prior to the war in 1939 but experienced a sharp fall in population to 64,678,000 at the end of the war in 1946. With a GDP of US\$377,284,000 at the beginning of the war, GDP levels fell to US\$143,381,000 in 1946 (GGDC, 2009). During this period, there was a shortage of capital, and physical reconstruction was needed.

After the war, President Harry Truman appointed George Marshall, as the Secretary of State because of his victory in the war. George Marshall was a prominent soldier who directed the American army at the time of the war. He won the Nobel Peace Prize in 1953 and is known to be one of the most prominent soldiers in the history of America (Nobelprize, 2018). In response to the critical situation in these countries including Germany and France, Marshall led a

team to craft the Marshall Plan. The plan became officially known as the Economic Recovery Program. It intended to contribute to restoring and rebuilding the broken European economies (The George C. Marshall Foundation, n.d.). President Harry Truman declared that the transfer of aid to poor countries was an attempt to foster growth in underdeveloped areas in a manner akin to the Marshall plan (Edwards, 2014). Similarly, the OECD affirms that the purpose of aid is to stimulate growth in recipient countries (OECD, 2016).

The Marshall Plan was successful, and so policymakers were optimistic about aid and had the expectation that it would have future benefits to other countries such as the developing countries in Africa. As such, just as capital was provided to spur growth in the European countries, the neo-classical models of growth such as the Harrod-Domar (1956) and Solow (1960) growth models suggest that the provision of capital could assist developing countries. The two-gap model by Chenery and Stout (1966) also proposes that foreign aid plays a critical role in overcoming the savings and foreign exchange gap faced by poor countries. In many developing countries, foreign aid is masked by other external capital flows such as foreign direct investment and remittances. However, this is not the case in many poor countries especially in sub-Saharan Africa where foreign aid is a vital source of fund to support government spending (Tarp, 2009). The table below shows that sub-Saharan African countries received a more enormous amount of aid as compared to foreign direct investment in 2015.

Table 2

*A comparison of ODA and FDI for Sub-Saharan Africa*

Official Development Assistance	Foreign Direct Investment
US\$ 45.877 billion	US\$ 34.174 billion

In hindsight, it appears almost naive to just transfer foreign aid to a poor country and expect it to work if the institutions in the poor country are weak and corruption is rife (Armah, 2010; 2016). However, the level of knowledge at the time gave every reason to be hopeful after the success of Marshall plan using aid to building Europe back after the devastation of World War II.

### **Trends in Aid**

Over the period, ODA aid has fluctuated which reflects the perceptions underlying aid. Total aid grew steadily until the early 1990s, but it started to decline in 1992 (Tarp, 2009). In spite, of the fluctuations in aid, aid inflows to poor countries reached an all-time high in 2013 when it increased by 6.1% (OECD, 2013). Over the years, the United States, the United Kingdom, Germany, France and a few more have been the most significant donors of aid. The United States is the largest donor of aid in terms of the gross amount of aid it gives to recipients. In 2014, the country gave aid to 96% countries, which represents 184 countries out of 193 who are member states of the United Nations (Matthews, 2014). Interestingly, when aid donated is expressed as a percentage of the gross national income, the United States is one of the smallest donors. According to the OECD, the United States spent a total of US\$35.26billion on aid in 2017 but this was just 0.18% of its GNI (OECD, 2017). Thus, even though the United States gives a larger amount of aid, it spends little on foreign aid relative to the size of the economy.

However, it is worthy to note that the pattern of aid in most countries has evolved over time. The disbursement of aid has increased over the time such that major donors of aid donated a total of US\$121.5billion in 2008 as compared to US\$29.4billion in 1985, an increase of 313%. This increases in aid were in response to the call to assist sub-Saharan African countries lagging

in development, an initiative at the G8 meeting in Britain in 2005 (Todaro & Smith, 2015; Tarp, 2009)

It is interesting to observe that the allocation of aid is quite strange and arbitrary. According to Todaro and Smith (2015), some of the poorest regions in the world receive less aid than those performing quite well. For example, the South Asia region, where more than 50% of the population is poor, received \$8 per person in aid in 2008 whereas the Middle East and North Africa region whose GDP per capita is about three times the South Asia region and thus who are better off than the South Asia region received \$73 per person in aid (Todaro & Smith, 2015). This paradox is also evident when it is analyzed at the individual country level. India is a country with extremely poor people, but they received \$2 per person in aid while a middle-income country like Jordan received \$126 per person in aid in 2008 (Todaro & Smith, 2015).

It can be seen from here that it seems richer countries receive a larger amount of aid than poorer countries. This shows that aid is given to recipient countries not only on the basis of the needs of recipients or for benign development purposes. As opined by Todaro and Smith (2015), political and military motivations is another factor and a basis of bilateral aid. However, multilateral aid which is given by international agencies such as the World Bank is purposely given because of economic motivations (Todaro & Smith, 2015).

### **Different views of aid**

There are a lot of controversies surrounding the aid-growth relationship. Several authors have contradictory findings concerning the relationship between aid and growth. While some contest that aid is growth retarding, others, on the other hand, argue that aid augments growth.

Some scholars have claimed that there is a fragile relationship between investment in physical capital and growth in developing countries contrary to the predictions of neoclassical economic models probably due to the absence of relevant institutions. From this, it is unsurprising that it is difficult to establish a relationship between growth and foreign aid, a substitute of physical capital (Kenny, 2005). Easterly (2006) for example ascertains that the inflow of foreign aid from the West has not done much to alleviate poverty in the rest (poor countries). Moyo (2009) supports this argument by Easterly (2006) as she argues that in spite of the trillion dollars of aid transferred to Africa in the past 50 years, death rates have rather escalated and the economic performance is mediocre at best. Sachs (2005) however, is a strong supporter of aid and argues that aid has reduced death rates in poor countries through health care delivery programs.

Research by some authors have also proven that the inflow of foreign aid can be beneficial depending on some pre-conditions: good policies (Burnside & Dollar, 2000) or political stability (Islam; 2005; Armah, 2010). Others have argued for good institutions and low corruption as pre-requisites for the effectiveness of aid (Armah, 2016). Burnside and Dollar's (2000) stance on the issue influenced donors to the extent that foreign aid is now given to some countries on the basis of the existence of sound policies in recipient countries.

Islam (2005) counters this argument in his study. Islam (2005) performed a robust test to find out whether political instability is a factor to be considered in the aid-growth relationship. Performing cross-sectional regression for a sample of 65 countries for the period 1968-1997, Islam (2005) found out that even in the presence of good policies, aid is ineffective when the economy is politically unstable. Thus, political stability is a necessary condition for aid to promote growth instead of good policies according to Islam (2005). Similarly, using more recent

data and a dataset of SSA countries, Armah (2010) argues that aid works in politically stable countries and is most efficacious where corruption is low. Hansen and Tarp (2000) instead argue that there exists a positive relationship between aid and growth which is not conditional on good policy.

In some instances, research has shown that countries who have good policies receive more aid than others. The research on corruption and foreign aid by Alesina and Weder (2002) show that good governance is taken into consideration by some donors.

Evidently, foreign aid has the potential of fostering growth through an increase in production via increasing the capital stock and undermining exchange rate constraints and therefore, a complete cessation of aid is not a guarantee that the economies of poor countries will improve. As Tarp (2009) rightly puts it, “the challenge is to improve foreign assistance effectiveness so that living standards in poor countries are substantially advanced”. Examples can be drawn from Taiwan, Korea and Mozambique where aid made contributions to growth and development (Tarp, 2009) indicating that aid can also help other poor countries grow.

### **Business Cycle Condition of Foreign Aid**

Several kinds of literature exist on the volatility and the business cycle condition of aid. This is critical because aid volatility can have significant consequences on a country’s need for aid and ultimately on economic growth. Some types of aid such as emergency aid are highly volatile, and this is because they are designed to be given to countries during periods of crises (Fielding & Mavrotas, 2005). As such, Fielding and Mavrotas (2005) focus on sector and programme aid which accounts for 95% of total aid volumes. In their paper, they examine aid volatility for 66 aid recipients over the period 1973-2002. Most importantly, the authors used the Hodrick and Prescott (1997) filter to extract trends in the data and to ensure that the data is

stationary. They find that sector aid flows in open economies are highly volatile and that sector aid and programme aid are positively correlated.

Unlike Fielding and Mavrotas (2005), Markanyada, Ponczek, and Yi (2011), in their article, assesses the impact of aid volatility on the economic performance of countries. In the study, the researchers first test the validity of aid volatility and growth relationship across different time horizons, different sources of aid and by aid volatility interactions with country characteristics. Secondly, they assess whether the impact of aid volatility depends on country characteristics such as the monetary and fiscal decisions. Lastly, the authors examine the impact of international development association (IDA) on growth. They perform the analysis by estimating an equation based on cross-sectional ordinary least squares, using data on 95 developing countries over the period 1960-2000. Here, the dependent variable used is the average growth rate of real GDP per capita. To reduce bias, they include a set of control variables including, gross capital formation, initial real GDP, inflation rate, initial life expectancy, the average growth of terms of trade, political instability and the regional location (Sub-Saharan Africa and East Asia Pacific). With respect to sources of aid, they find out that bilateral aid is most volatile in all the different time horizons while multilateral aid is the least volatile. Concerning country characteristics, they found out that “aid volatility has a negative impact on long-run growth in poor countries only” (Markandy, Ponczek, & Yi, 2011, p. 51). The authors reduced bias associated with cross-country regressions by dropping outliers for each time horizon.

Pallage and Robe (2001) assess the business cycle characteristic of foreign aid. They conduct this analysis for 63 recipient countries and 18 donor countries between 1969 and 1995. However, they focus primarily on Africa because it is the region with the largest recipient of aid.

The authors used the Hodrick and Prescott filter in examining the business cycle aspects of foreign aid. To capture differences, the authors decompose aid into bilateral and multilateral components. Their study revealed that aid is procyclical for more than two-thirds of 38 African countries, including Ghana and Zambia, with only two of them being countercyclical. Out of the 25 non-African countries in the study, it was found out that, aid was countercyclical for 9 of them, procyclical for 12 and acyclical for the remaining 9 countries. They explain that foreign aid is procyclical because it may “feed into the recipient’s output” (Pallage & Robe, 2001). They ascertain that this, however, requires further explanation because they find no statistical relation between aid output and aid dependency. They also observe that donor countries may at times adjust aid flows to their business cycle. Hence, they suggested that aid may be disbursed procyclically which “given a positive correlation between North-South business cycles, leads to procyclical aid receipts” (Pallage & Robe, 2001). A notable feature of their study was that they eliminated countries that had missing data from the study.

Bulir and Hamann (2008), examine the impact of aid volatility in developing countries. In addition, they find out whether aid is predictable or not and also whether aid inflows are related to macroeconomic shocks in recipient countries. Like Pallage and Robe (2001), they transformed the aid and revenue series into natural logarithms and detrended them using the Hodrick and Prescott filter. They include data on gross and net aid and domestic revenue for 76 countries from 1975 to 2003, including Ghana and Zambia. They state that aid volatility, whether predictable or unpredictable is a challenge to poor aid-dependent countries primarily because it would lead to liquidity constraints. This means that these countries would not be able to borrow in capital markets. The study found out that, despite aid being unstable, it is also procyclical. This is because aid tends to fall when domestic revenue falls. They also argue that the

procyclicality of aid is also linked to the condition given by bilateral donors. Some donors do not have all information relating to a country, as such as soon as they observe weak macroeconomic indicators about a country, they see it as a signal to poor performance and tend to withhold future disbursement of aid. This tends to make foreign aid procyclical.

Whiles authors like Pallage and Robe (2001) study the cyclical condition of aid with respect to income, Bulir and Hamann (2008) assessed the cyclical condition of aid with respect to fiscal receipt. Combes and Ouedraogo (2014) however, adopt a different approach in their study and assessed the cyclical condition of aid with respect to fiscal policies. Specifically, the authors wanted to find out whether procyclical aid can lead to procyclical fiscal policies in 39 sub-Saharan African countries from 1985 to 2012. They find that procyclical bilateral aid is negatively related to procyclical fiscal policies whereas procyclical multilateral aid reflects procyclical fiscal policies.

Alesina and Weder (2002) try to provide answers to these three questions; (i) do corrupt governments receive less aid? (ii) do multilateral donor take corruption into consideration and are there differences among donor countries? and lastly, (iii) does foreign aid decreases or increase corruption? With respect to the method, the authors ascertain that corruption is difficult to measure so they use all available data on corruption for the study. Thus, they included seven indicators of corruption and conducted the research using data from several time periods between 1970 and 1995. To effectively answer the first question, they control for other variables such as the level of the income of recipient countries, economic policies, political system, size of the economy, and any links between donor and recipient. They found out that, more corrupt countries are successful in attracting more aid. This is possible because, when recipients are highly corrupt, they are likely to bribe or misrepresent conditions to aid donors. This would

enable them to receive more aid. For the second question, it was revealed that donors consider the corruption level. Scandinavian donors, for instance, give more aid to less corrupt countries. The United States, on the other hand, pays no attention to the quality of government of recipients of aid. This is because the United States pays less attention to corruption but their criteria for giving aid ends up favoring more corrupt countries. For the third question, they found out that an increase in aid increases corruption which is consistent with the “voracity effect.” The voracity effect is a concept that implies that “shocks generate a more-than-proportionate change in fiscal redistribution and reduces growth” (Tornell & Lane, 1999).

### **Conclusion**

The findings presented in this chapter show that there exists a number of studies on foreign aid regarding the aid-growth relationship, the volatility of aid and whether aid is procyclical or countercyclical. Foreign aid serves as a major source of income to poor countries now as it helped devastated European countries to recover through Marshall’s Economic Recovery Program (the Marshall Plan).

Also, it is clear from the trends in aid that some countries that are on the path to development receive a larger amount of aid as compared to poor countries as seen in literature. This is in line with the problem this research seeks to tackle: to find out the direction of foreign aid in countries such as Ghana and Zambia. Hence, econometric procedures would be used in this study to provide strong evidence of the problem.

It is also clear that the existing literature on the business cycle condition of aid does not focus specifically on Ghana and Zambia. This is another gap this research seeks to fill: by finding out whether aid is procyclical or countercyclical for Ghana and Zambia specifically. The approach by Pallage and Robe (2001) will be adopted and used for this study. This is because

they focus on the cyclical conditions of aid with respect to income, a proxy for economic growth, which is in line with this study. Pallage and Robe (2001) also detrended the time series data and computed the correlations between aid and output which is necessary for this research.

## CHAPTER 3: METHODOLOGY

### Overview of the Method Section

This research ascertains whether foreign aid moves in the same direction as the economic cycle or otherwise. In other words, this study sought to find out whether foreign aid is procyclical or countercyclical.

A similar study by Pallage and Robe (2001), revealed that foreign aid is procyclical for most African countries except Tanzania. However, their research which spanned the period from 1969 – 1995 is clearly dated. This paper will include current data on aid and growth for the study and will also focus specifically on Ghana and Zambia, two African countries who receive aid in Western and Southern Africa respectively. These countries will be compared to assess their aid and growth patterns. They have been selected because they are similar along the same dimensions, that is, they both receive aid, they are both politically stable, and both countries have abundant natural resources. There is also data available for these countries which makes it prudent to use them for the study. This chapter is further divided into subsections that discuss the research design, scope, data collection techniques, data analysis procedures, data reliability as well as validity considerations.

### Research Design

The research design of a study is a strategy that justifies the methods used in the study and how they relate to the research questions and hypothesis (Jupp, 2011). The research design specifies what method is to be used, a justification of why it is being used and how it will be carried out. The research design also takes into consideration relevant data sources and how data would be analyzed.

A mixture of descriptive and explanatory methods are employed in the research. Explanatory seeks to explain and identify the cause and effect of relationships (Maxwell & Mittapalli, 2012) while descriptive research describes the relationships between operational variables. Explanatory methods apply because part of the research objective is to reveal the relationship between two variables. As Jupp (2011) rightly puts it, “it would be very difficult to establish actual effects without numerical data.” Measurable numerical data would be collected from the World Bank’s database and other sources, and this will allow for statistical tests to be undertaken. A quantitative approach is best for this study because it will allow for the testing of hypothesis and also subject the data to statistical analysis (Jupp, 2011). Descriptive analysis will be used to discuss the relationships and inter-relationships between variables.

In assessing the procyclicality or countercyclicality of aid, this study adopted the approach by Pallage and Robe (2001) where the correlation between the cyclical component of aid and GDP was computed. This study also moved further to measure the actual relationship between aid and GDP in both countries. Thus, a multiple linear regression model was used in estimating this relationship. Regression analysis is important because it is used to predict one variable based on the knowledge of another variable holding other variables constant. In this study, the main variables under consideration are foreign aid and economic growth. This study employed a quantitative approach to analyzing data.

### **Description and Justification of Relevant Models**

To determine the business cycle condition of aid, this study computed the correlation between the cyclical component of aid with GDP as done by Pallage and Robe (2001). To ensure that the data is not affected by trends and seasonality, this study de-seasonalized the data and removed trends. The appropriate statistical technique such as the Hodrick and Prescott (HP) filter

was adopted to remove the seasonal components of the data. The HP filter extracts the growth and the cyclical component from the data series making it possible to determine the business cycle of aid (Pallage & Robe, 2001).

In estimating the relationship between aid and growth using a multiple linear regression model, this paper followed the works of other authors on aid and growth such as Appiah (2012), Armah (2010), Rajan and Subramanian (2008), Islam (2005), Bulir and Hamann (2008) and Burnside and Dollar (2000). All these authors examine the nexus between aid and economic growth and other relevant variables in the economy such as inflation as in the case of Burnside and Dollar (2000) and Rajan and Subramanian (2008).

Following Appiah (2012), the aggregate production function is used to estimate the aid-growth relationship. As indicated in the theoretical framework used in this study, the neo-classical model of growth suggests that the presence of capital can explain the growth in economies. Besides these, there are other variables which significantly accounts for the changes in output in a given country. Therefore, it is important to include these variables in the aid-growth equation to hold them constant.

From the discussion above, the regression model used in this paper is

$$RGDP_t = \beta_0 + \beta_1 AID_t + \beta_2 CAP_t + \beta_3 FDI_t + \beta_4 LE_t + \beta_5 REER_t + \beta_6 GOVE_t + \beta_7 INF_t + \beta_8 AIDV_t + \varepsilon_t$$

Where RGDP = Real GDP

$B_0$  = intercept

AID = official development assistance

CAP = capital stock

FDI = foreign direct investment

LE = life expectancy

GOVE = government's expenditure

INF = inflation rate

AIDV = aid volatility

$\varepsilon_t$  = white noise errors;  $\varepsilon_t \sim N(0, \delta^2)$ : the distribution of the errors has a mean of 0 and standard deviation  $\delta^2$ .

T represents the time since the data is a time series data

### **Description of the Dependent and Independent Variables**

The main variables of interest in this study are foreign aid and economic growth where foreign aid is the independent variable with economic growth as the dependent variable.

Data on foreign aid which is measured as Official Development Assistance by the OECD was retrieved from the database of OECD. Following Pallage and Robe (2001), this study decomposed aid into bilateral and multilateral aid to capture the differences. This is because, as seen from literature, bilateral aid may be influenced by political and military motivations as compared to multilateral aid which is given solely based on needs (Alesina & Dollar, 2000; Todaro & Smith, 2015). Real GDP was used as a proxy for economic growth as used by Pallage and Robe (2001). The real value instead of the nominal value of GDP was used because it is a better measure of economic activity as it reflects the changes in production while holding price constant. Similarly, the real value of multilateral and bilateral aid was used.

Other variables of interest in this study are capital, foreign direct investment, life expectancy, real effective exchange rate, government expenditure, inflation, and aid volatility. Other studies such as Appiah (2012), Armah (2010), Markandya, Ponczek and Yi (2011) and Burnside and Dollar (2000) included these variables. Gross fixed capital formation as a percentage of GDP is used as a proxy for capital (Appiah, 2012). This is measured as an increase in the investment in physical assets in the economy.

Authors like Burnside and Dollar (2000) and Rajan and Subramanian (2008) include inflation in the empirical model because it is used as a measure of monetary policy. Inflation is measured as the annual rate of growth of the price levels in the economy. Life expectancy is a proxy for the measure of health in the economy (Armah, 2010; Rajan & Subramanian, 2008). Government expenditure which can affect growth in the economy was included by Armah (2010) and Appiah (2012) in their model. Government's expenditure on goods and services measured as government final consumption expenditure as a percentage of GDP was included in the model. This research paper also included aid volatility as a covariate. Aid volatility is measured as the square root of the variance of aid as used by Armah (2010). It is an important variable because it reflects the fluctuations in aid (Markandya, Ponczek & Yi, 2011). Other important variables used in this study are foreign direct investment (Arawomo, Badejo & Oshota, 2015) and real effective exchange rate.

### **Sources of Data, Frequency, and Range**

This research updates the work of Pallage and Robe (2001), who conducted a similar study, but their data is now dated. This study used current and a longer period of data. This study used yearly time series data, ranging from 1960 – 2015, spanning a period of 56 years. This relatively large sample of years used in this study will make the results valid as compared to

using a small sample size. Data for official development assistance specifically, bilateral and multilateral aid were obtained from the database of the OECD. Data on government expenditure and capital stock were also obtained from the International Financial Statistics (IFS) database of the International Monetary Fund (IMF). All other variables were obtained from the World Bank via the World Development Indicators.

### **Estimation Procedures**

To assess the business cycle characteristics of aid, this paper estimated a contemporaneous correlation, a correlation with the output shifted backward one year (lagged) and another one with the output shifted forward one year (lead). For the lagged output, this revealed the relationship between previous GDP and current aid, that is, whether countries receive higher or lower aid based on their economic performance the previous year. Likewise, the GDP with leads investigated the correlation between current period aid and next year growth. This revealed whether countries eventually perform better or worse the following year after receiving aid.

This paper adopted the Ordinary Least Squares (OLS) method in its estimation procedures. This method helped in estimating the unknown parameters in the linear multiple regression model. Moreover, the data were transformed into a log-log model. This was done to find the percentage change in the dependent variable when there is a percentage change in the independent variable.

The multiple regression model used in this paper, which is a composite model of different previous models already described is:

$$\log(RGDP_t) = \beta_0 + \beta_1 \log(AID_t) + \beta_2 \log(CAP_t) + \beta_3 \log(FDI_t) + \beta_4 \log(LE_t) \\ + \beta_5 \log(REER_t) + \beta_6 \log(GOVE_t) + \beta_7 \log(INF_t) + \beta_8 \log(AIDV_t) + \varepsilon_t$$

### **Data Preparation, Collation and Processing**

To avoid spurious results, an analysis of the time series data was conducted to ensure that the data is correct. To ensure that the data is not affected by trends and seasonality, this study de-seasonalized the data and removed trends. As done by Pallage and Robe (2001) and Bulir and Hamann (2008), the trends in the data were discarded using the Hodrick and Prescott (HP) filter, thus leaving the cyclical component of the data for correlational analysis.

In addition, in multiple regression analysis, it is important to ensure that the data follows all the assumptions underlying the regression model since violations of model assumptions undermine estimation of parameters and their interpretation. The variables used in this study are linear in parameters and random as well. Therefore, this paper further ensured that there is no perfect collinearity between the independent variables by showing the correlation between the variables through a correlation matrix. This is a time series data and as such, it is crucial to ensure that the data is stationary, that is, the mean and the variance must be constant over time. A unit root test was conducted to test for stationarity in the data. Finally, heteroskedasticity tests were done to ensure that the variance in the error term is constant over time. All these tests were done, so the data collected was adequately prepared for analysis which ensured that the results are not spurious.

### **Data Analysis**

The correlation coefficient was used to determine whether foreign aid moves in the same or opposite direction as the economic cycle. A positive coefficient will indicate that foreign aid is procyclical and a negative coefficient will indicate that aid is countercyclical. Also, the

parameter from the OLS was used to determine the association between foreign aid and Real GDP. The coefficient of aid in the model was used to assess the relationship between aid and growth. The p-value from the estimation was used to ascertain whether the relationship is significant or not. The p-value was tested against a significance level of 5%.

Excel and Eviews are the statistical software used in analyzing the data. The data were collected and cleaned in Excel. On the other hand, Eviews was used to perform the statistical analysis, that is, for estimating the unknown parameters, graphing the relevant variables and the scatterplots. The scatterplot is the appropriate graph because it will show the relationship between foreign aid and GDP graphically. As explained by the authors Moore, Notz and Flinger (2013) a scatter plot is helpful when both the explanatory and response variables are numerical continuous variable. In this study, the explanatory variable is foreign aid and the response variable is Real GDP, so scatter plots are presented in the data analysis chapter of this paper.

### **Hypothesis**

This research seeks to determine if foreign aid moves in the same direction as the economy or not. Thus, the hypothesis to be tested in this research is as follows:

Null Hypothesis

H<sub>0</sub>: There is no relationship between foreign aid and economic growth.

Alternate Hypothesis

H<sub>1</sub>: There is a relationship (positive or negative) between foreign aid and economic growth.

**Validity and Reliability**

Reliability measures the extent to which a test gives consistent results across different versions of instruments (Coghlan & Brydon-Miller, 2014). On the other hand, a valid measure is one that measures what it claims to do. Both reliability and validity measures seek to provide accuracy of the data. The data used in the study is based on a long period of 56 years. This will help to increase the validity of the statistical findings. Moreover, the data would be analyzed using appropriate econometric models which will increase the reliability of the study.

**Limitation**

Even though a lot of countries in Africa receive aid, this study focuses on just two countries, Ghana and Zambia. This is a limitation of this research as the findings will not be able to provide a generalization to other African countries. Moreover, missing data for some variables reduced the intended 56-year period to 35 years as the range of the data for the regression analysis.

## CHAPTER 4: RESULTS

### Overview

This chapter analyzes and presents the results obtained from the data. Secondary data were collected from the World Bank, the IFS and the OCED and analyzed using appropriate econometric techniques. This chapter includes descriptive statistics of the data, scatterplots and graphical views of some selected variables. This section also presents an analysis of the time series data to ensure that the data do not yield false results. Thus, multicollinearity and unit root tests were conducted to ensure the data is correct for usage in the multiple regression model. The methods used in this study is appropriate to answer the research questions posed and to achieve the objectives of the study.

### Descriptive Statistics

Table 3 below shows the descriptive statistics for the data collected for Ghana and Zambia. The measures used are the mean, median, standard deviation, the variance, kurtosis, skewness and some others. The mean shows the average value of the variable of the years. The mean for multilateral aid for Ghana is US\$313million when compared to US\$232million for Zambia. This shows that on average Ghana has received a larger amount of aid over the years when compared to Zambia. The standard deviation shows how spread the data is from the mean. The standard deviation for multilateral aid for both Ghana and Zambia are US\$ 267million and US\$270million respectively which are almost the same for both countries. The standard deviation for multilateral aids are very high when compared to the mean which is an indication the variations in aid over the years is high. The standard deviation for bilateral aid for Ghana and Zambia are US\$227million and US\$249million respectively. The standard deviation for both types of aids is higher for Zambia, indicating that aid has been volatile in the country. The

descriptive statistics affirm findings in the literature that aid inflows in Zambia have declined over time. Ghana's real GDP has also been relatively higher with an average of US\$16.5billion while Zambia has US\$10.4billion as shown in table 3 and table 4 below.

Table 3

*Descriptive Statistics for Ghana*

DESCRIPTIVE STATISTICS - GHANA										
Measures	RGDP	MULTIAID	BILAID	CAP	FDI	LE	REER	GOVE	INF	AIDV
Mean	16,578,795,964.90	313,579,824.56	388,226,315.79	16.91888	2.759325	54.47557	342.0868	12.15677	28.24421	2.22E+08
Standard Error	1477137564	35442146.26	30094942.98	0.996353	0.494728	0.632155	111.0474	0.402624	3.812911	19452002
Median	11095159459	314990000	362120000	17.87176	1.607705	55.41548	117.4035	11.55908	18.08308	2.16E+08
Standard Deviation	11,152,144,047.65	267,582,336.28	227,211,836.84	7.522297	3.206205	4.730618	675.4751	3.039748	27.49529	1.47E+08
Sample Variance	1.2437E+20	7.16003E+16	5.16252E+16	56.58494	10.27975	22.37875	456266.7	9.240069	755.9909	2.16E+16
Kurtosis	1.486122019	0.158489108	-0.379522472	-1.09684	-0.47383	-1.13289	13.73629	1.193282	4.992556	4.054761
Skewness	1.556043812	0.716288928	0.499037182	-0.05955	1.025041	-0.15191	3.617479	0.896502	2.188262	1.284093
Range	41160911112	1149440000	952000000	28.40712	10.17741	16.57578	3394.23	15.02667	131.297	8.26E+08
Minimum	7006635823	-8900000	17730000	3.377636	-0.66037	45.83146	69.58028	5.86129	-8.42249	1410175
Maximum	48167546935	1140540000	969730000	31.78475	9.517043	62.40724	3463.81	20.88796	122.8745	8.27E+08
Sum	9.44991E+11	17874050000	22128900000	964.3762	115.8917	3050.632	12657.21	692.9359	1468.699	1.26E+10
Count	57	57	57	57	42	56	37	57	52	57

Data source: Author's Estimate

Table 4

*Descriptive Statistics for Zambia*

DESCRIPTIVE STATISTICS - ZAMBIA										
Measures	RGDP	MULTIAID	BILAID	CAP	FDI	LE	REER	GOVE	INF	AIDV
Mean	10,426,801,337.94	232,333,962.26	460,583,508.77	0.513564	3.667478	49.08009	106.2966	0.096337	41.95013	1.77E+08
Standard Error	774869704.4	37109282.22	33005050.52	0.047631	0.394854	0.614672	3.92598	0.003651	8.578829	26436742
Median	8041117529	198710000	486360000	0.384409	3.282091	48.46788	101.1407	0.097322	23.32603	1.56E+08
Standard Deviation	5,850,137,977.49	270,159,652.50	249,182,666.99	0.326542	2.706983	4.599781	24.20137	0.027564	46.98818	2E+08
Sample Variance	3.42241E+19	7.29862E+16	6.2092E+16	0.10663	7.327755	21.15798	585.7061	0.00076	2207.889	3.98E+16
Kurtosis	1.658434326	20.13743024	-0.148465771	1.169465	-0.77161	0.685059	0.215745	-0.18257	2.917955	40.67983
Skewness	1.634148219	3.697722272	0.043018418	1.505763	0.500946	1.006756	0.830094	0.355097	1.882913	5.901197
Range	22459206729	1791750000	1154400000	1.24857	10.59673	18.16744	96.36775	0.121236	176.8826	1.54E+09
Minimum	4539542515	-15430000	9320000	0.164821	-0.99156	43.17215	69.09309	0.046465	6.429397	886037.7
Maximum	26998749244	1776320000	1163720000	1.413391	9.605168	61.33959	165.4608	0.167701	183.312	1.54E+09
Sum	5.94328E+11	12313700000	26253260000	24.13751	172.3714	2748.485	4039.27	5.491233	1258.504	1.01E+10
Count	57	53	57	47	47	56	38	57	30	57

Data source: Author's Estimate

### **Correlational Analysis**

Business cycles are measured as deviations from trend (Pallage & Robe, 2001). This means that the cyclical component of the variable under consideration should be correlated with the cyclical component of GDP to assess whether it is procyclical or countercyclical. In carrying out this procedure, this paper follows the method of Pallage and Robe (2001). The authors assert that in assessing business cycles, it is important to discard trends. Thus, using the HP filter, the data series for both aid and real GDP was detrended. The HP filter separated the trend and the cyclical component in the data. In order to understand the cyclical behavior of foreign aid in both countries, the correlation between aid and GDP is computed contemporaneously and with the dependent variable respectively shifted back and then shifted forward one year to create lags and leads of one year. The smoothing parameter used is 100 since the data is yearly (Pallage & Robe, 2001). The output for the various correlation from Eviews is shown in the diagrams below.

### **Ghana**

Figure 6 below is a graphical view of the original data, the trend and the cyclical component of multilateral aid inflows for Ghana. The same is done for real GDP and bilateral aid which is shown in figure 7 and figure 8 respectively.

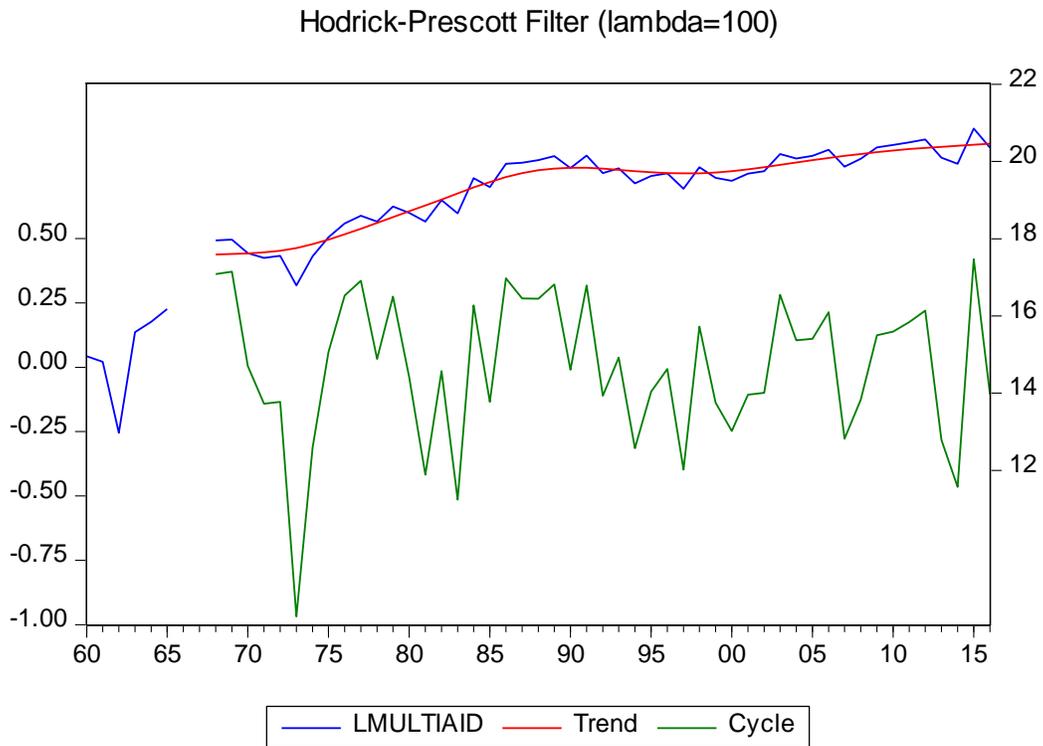


Figure 7: Graph showing the original data, the trend and the cycle for multilateral aid in Ghana

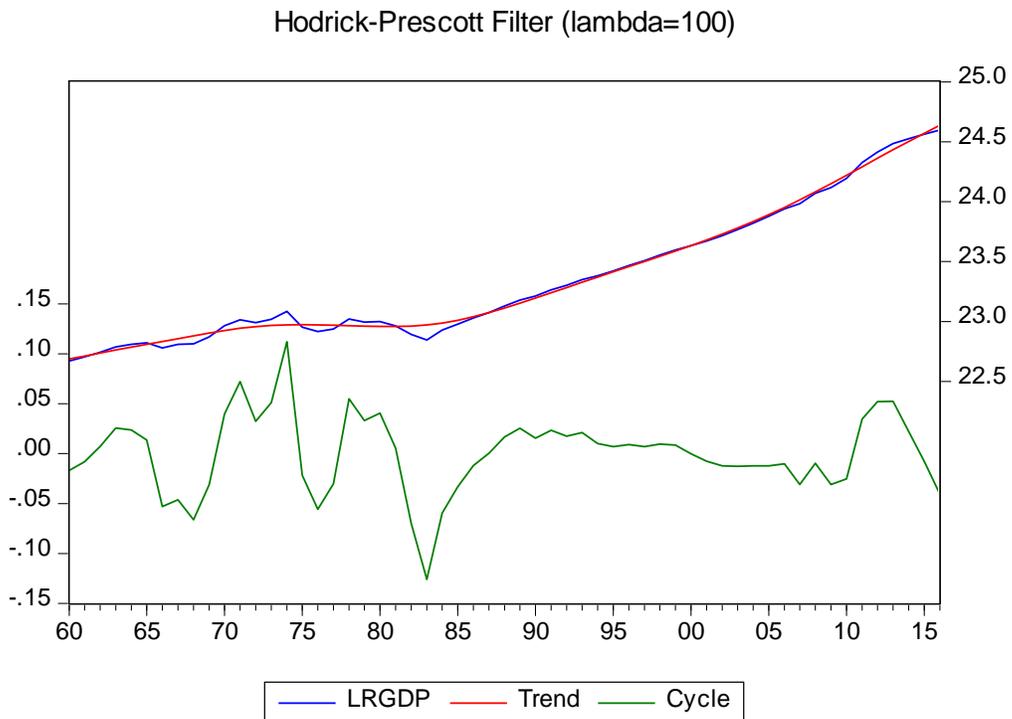
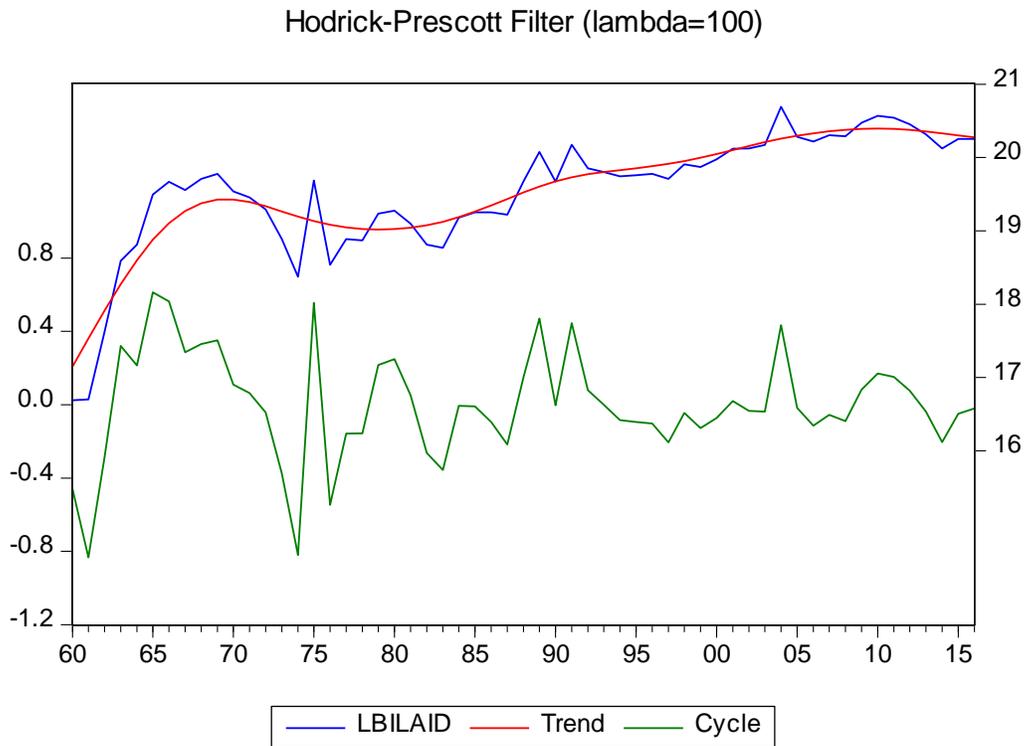


Figure 8: Graph showing the original data, the trend and the cycle for real GDP in Ghana



*Figure 9:* Graph showing the original data, the trend and the cycle of bilateral aid in Ghana

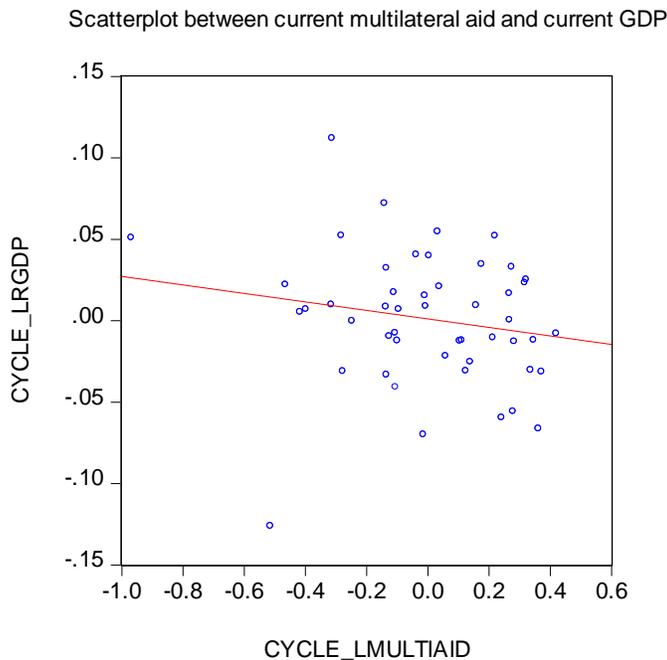
### Contemporaneous Correlation

As stated earlier, this study will compute the correlation between the cyclical component of aid and GDP as well as show scatterplots of these variables. These were done in Eviews. The contemporaneous correlation between multilateral aid and real GDP is -0.18. This negative value denotes a negative relationship between the two variables. This negative correlation is further shown in the scatterplot in figure 10 below. It is clear from the graph that this relationship is not strong, and the points are dispersed from the line of best fit. The negative relationship shows that when multilateral aid increases, Real GDP falls and vice versa. Therefore, multilateral aid in Ghana is countercyclical. This means that Ghana receives multilateral aid when they are in need.

Table 5

*Correlation between current multilateral aid and current real GDP for Ghana*

	CYCLE_LMULTIAID	CYCLE_LRGDP
CYCLE_LM...	1.000000	-0.181613
CYCLE_LR...	-0.181613	1.000000



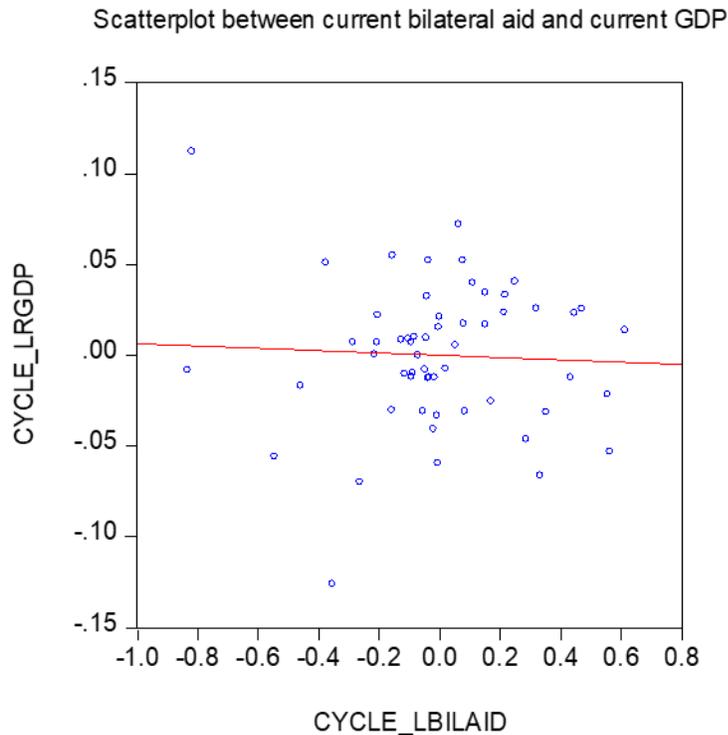
*Figure 10: Scatterplot between current multilateral aid and current real GDP for Ghana*

A similar analysis is done for bilateral aid in Ghana. The contemporaneous correlation between bilateral aid and real GDP for Ghana is shown in table 6. The case for bilateral aid is also similar. With a correlation of -0.0048, bilateral aid is also negatively correlated with real GDP for Ghana. It is worthy to note that the correlation is very small, so it can be said that there is almost no relationship between bilateral aid and real GDP as seen in the scatterplot in figure 11 below. Therefore, bilateral aid is acyclical in Ghana.

Table 6

*Correlation between current bilateral aid and current real GDP for Ghana*

	CYCLE_LBIL AID	CYCLE_LRGDP
CYCLE_LBI...	1.000000	-0.047923
CYCLE_LR...	-0.047923	1.000000



*Figure 11: Scatterplot between current bilateral aid and current real GDP for Ghana*

**Lagged Output Correlation**

Moreover, in order to assess whether the amount of aid countries receive is based on their previous GDP, the dependent variable is lagged one year. This is to ascertain if aid given to Ghana last year influences Ghana’s current growth. The correlation between current multilateral aid and previous GDP is -2.98. Figure 12 below is the scatterplot graphically showing this negative relationship. This indicates that when Ghana experiences lower growth in the previous

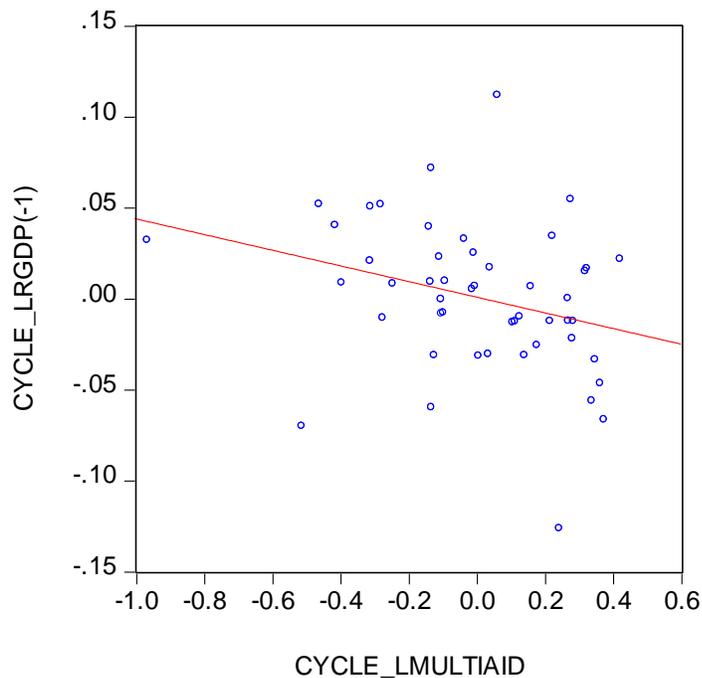
year, they receive a higher amount of multilateral aid and when they experience higher growth in the previous year, they take a lower amount of aid.

Table 7

*Correlation between current multilateral aid and previous real GDP for Ghana*

	CYCLE_LMULTIAID	CYCLE_LRGDP(-1)
CYCLE_LMULTIAID	1.000000	-0.298579
CYCLE_LRGDP(-1)	-0.298579	1.000000

Scatterplot between current multilateral aid and previous real GDP



*Figure 12: Scatterplot between current multilateral aid and previous real GDP for Ghana*

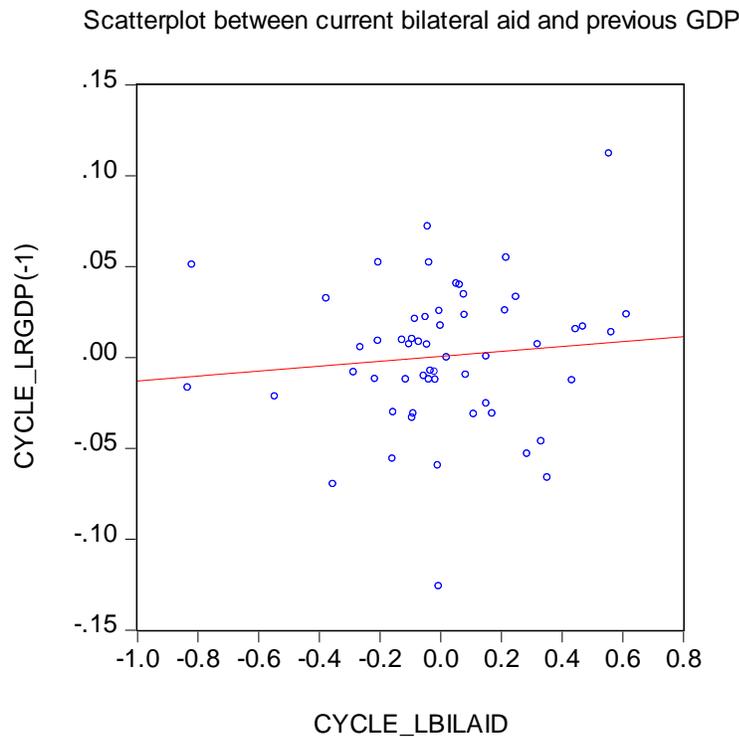
The contrary is found for bilateral aid. When real GDP is lagged one year, the scatterplot shown in figure 13 below reveals a positive relationship between bilateral aid and real GDP. The correlation coefficient is 0.1 from table 9 below. The positive correlation means that when last year's GDP is low, the amount of bilateral aid Ghana receives is lower and when the previous

real GDP is high, Ghana receives a higher bilateral aid. Bilateral aid seems to be tied to good performance in the previous year.

Table 8

*Correlation between current bilateral aid and previous real GDP for Ghana*

	CYCLE_LBIL AID	CYCLE_LRGDP(-1)
CYCLE_LBIL AID	1.000000	0.100473
CYCLE_LRGDP(-1)	0.100473	1.000000



*Figure 13: Scatterplot between current bilateral aid and previous real GDP for Ghana*

**Lead Output Correlation**

This study also sought to assess the relationship between current aid received and real GDP next year. The purpose of this is to ascertain how countries eventually perform in terms of real GDP when they receive aid. The correlation between multilateral aid and next year’s real

GDP is -0.038 as shown from the output from Eviews in table 9 and figure 14. This depicts almost a negative relationship and so Ghana eventually performs worse after they receive multilateral aid.

Table 9

*Correlation between current multilateral aid and next year's GDP for Ghana*

	CYCLE_LMULTIAID	CYCLE_LRGDP(1)
CYCLE_LMULTIAID	1.000000	-0.037924
CYCLE_LRGDP(1)	-0.037924	1.000000

Scatterplot between current multilateral aid and next year GDP

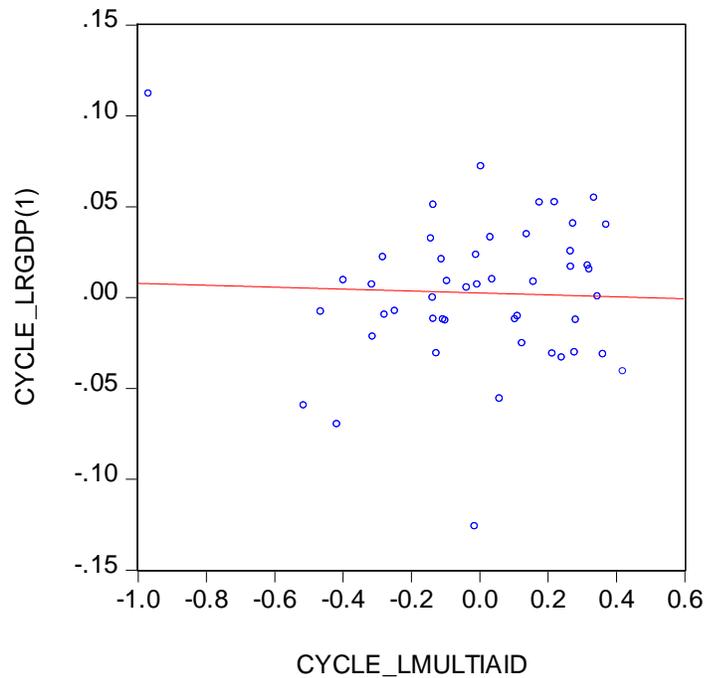


Figure 14

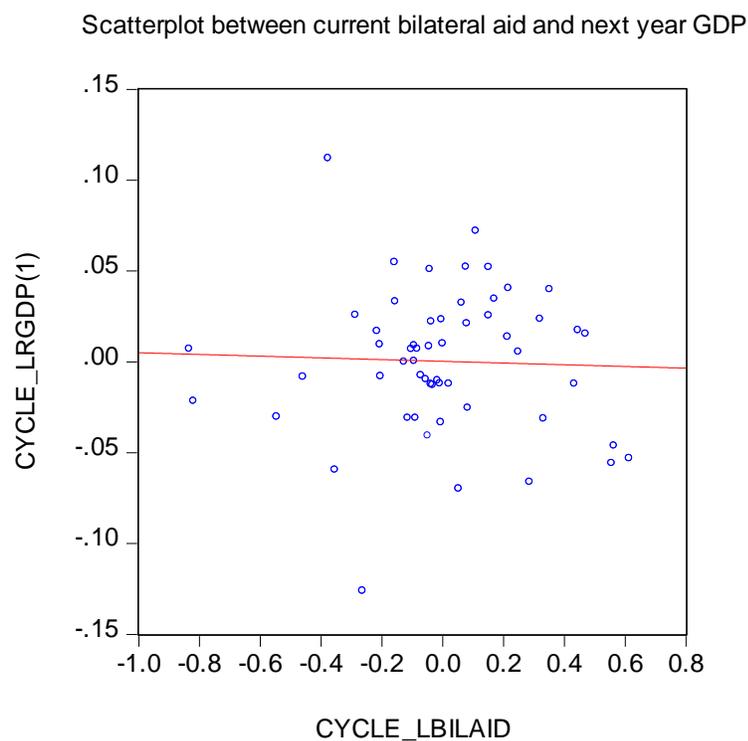
Scatterplot between current multilateral aid and next year's real GDP for Ghana

The correlation between current bilateral aid and next year's GDP in Ghana also shows a negative relationship. Table 10 shows the correlation coefficient of -0.036 and the scatterplot in figure 15 below graphically shows this negative relationship. This relationship is weak, which means that there is no relationship between the bilateral aid Ghana receives and GDP the following year.

Table 10

*Correlation between current bilateral aid and next year's real GDP for Ghana*

	CYCLE_LBIL AID	CYCLE_LRGDP(1)
CYCLE_LBIL AID	1.000000	-0.035604
CYCLE_LRGDP(1)	-0.035604	1.000000



*Figure 15: Scatterplot between current bilateral aid and next year's real GDP for Ghana*

**Zambia**

The same procedure was used for the case of Zambia. Figures 11, 12 and 13 below shows the graph of the detrended series for multilateral aid, real GDP and bilateral aid respectively.

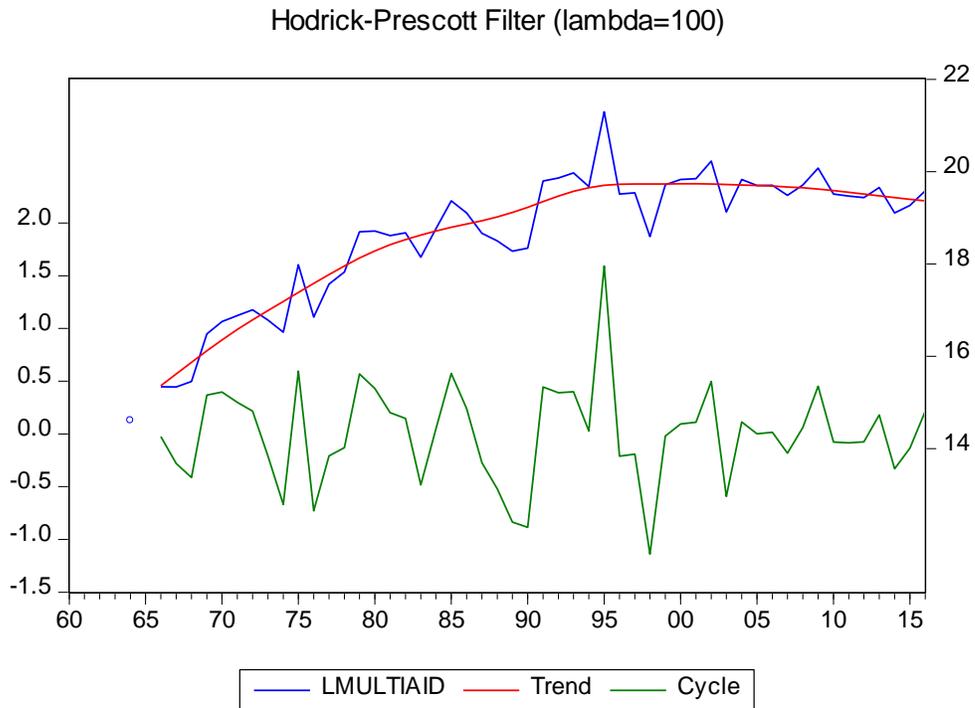


Figure 16: Graph showing the original data, trend and the cycle for multilateral aid for Zambia

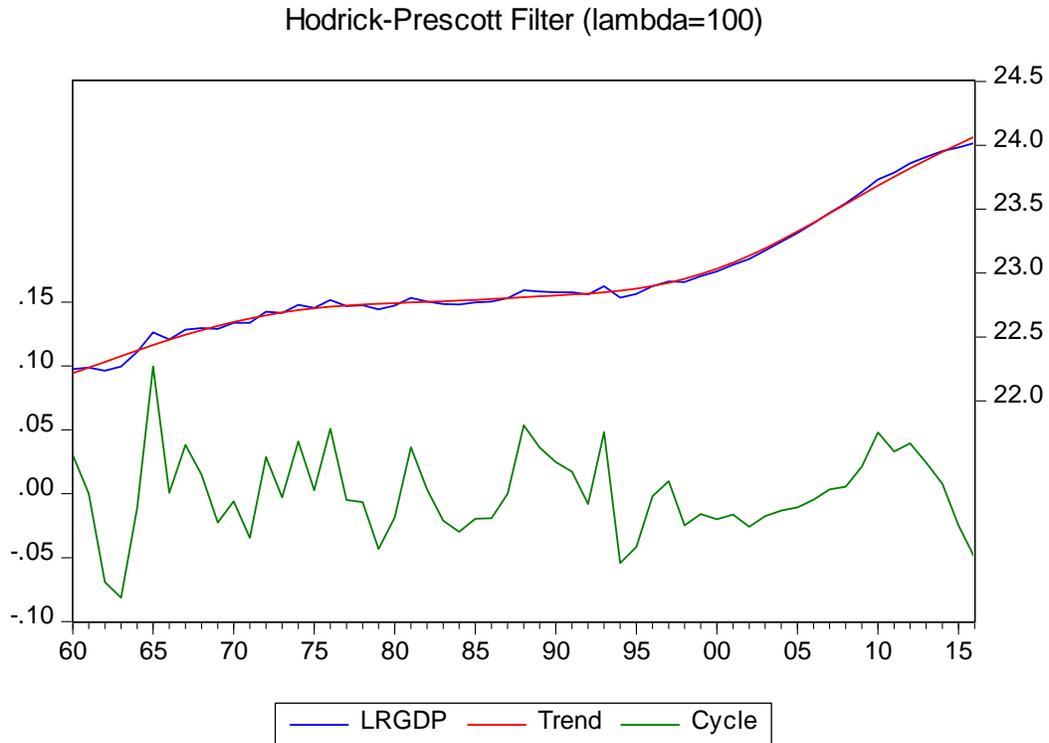


Figure 17: Graph showing the original data, trend and the cycle for real GDP for Zambia

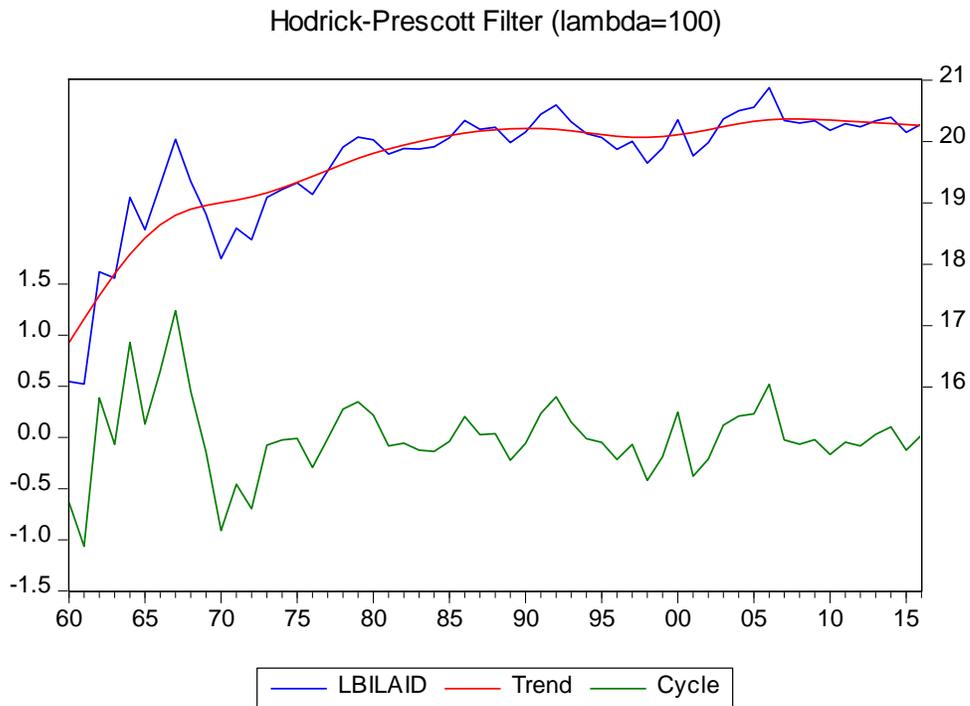


Figure 18: Graph showing the original data, the trend and the cycle of bilateral aid for Zambia

### Contemporaneous Correlation

The contemporaneous correlation between the cyclical component of multilateral aid and real GDP is -0.36 as shown in table 11. This negative correlation is depicted in the graph in figure 19 below. Therefore, multilateral aid is countercyclical in Zambia. This means that Zambia receives a higher amount of multilateral aid when they have a lower GDP and vice versa.

Table 11

*Correlation between current multilateral aid and current real GDP for Zambia*

	CYCLE_LMULTIAID	CYCLE_LRGDP
CYCLE_LM...	1.000000	-0.364836
CYCLE_LR...	-0.364836	1.000000

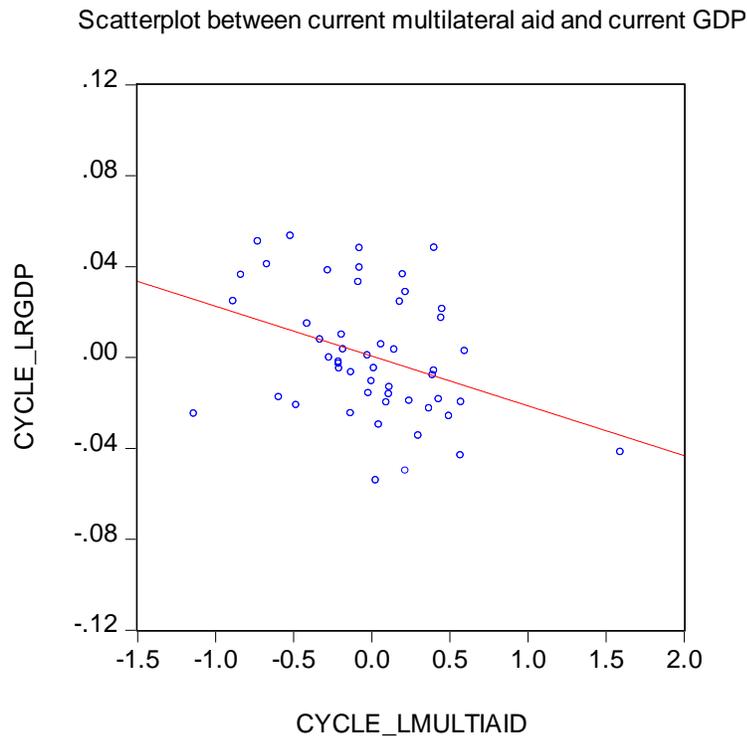


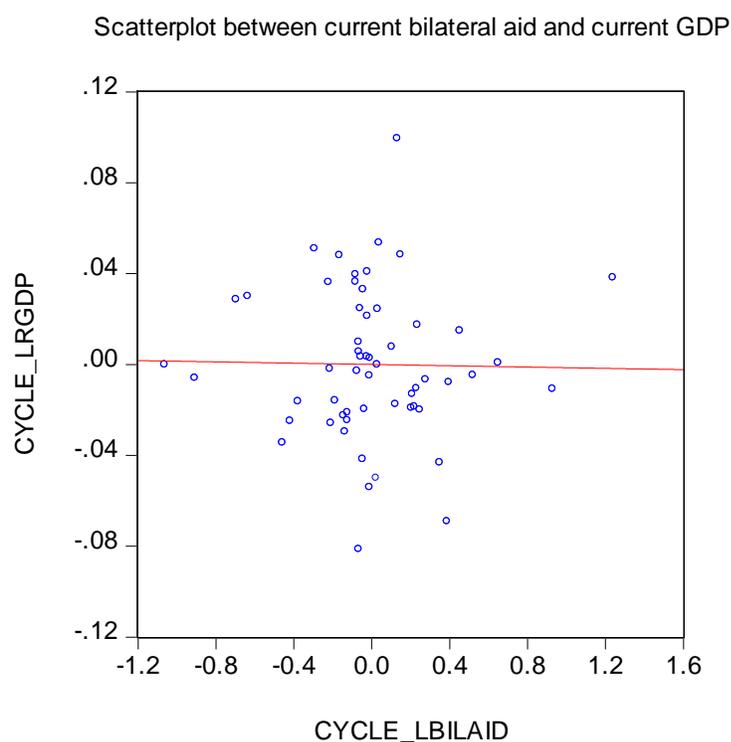
Figure 19: Scatterplot between current multilateral aid and current real GDP for Zambia

The correlation between the cyclical component of current bilateral aid and current real GDP is -0.016. This is very similar to Ghana's correlation and signifies that there is almost no relationship between bilateral aid and real GDP. Thus, bilateral aid is acyclical. This linear and weak relationship between aid and real GDP denotes that Zambia's receipt of bilateral aid is not influenced by whether they are performing well or not.

Table 12

*Correlation between current bilateral aid and current real GDP for Zambia*

	CYCLE_LRGDP	CYCLE_LBILAI
CYCLE_LR...	1.000000	-0.016312
CYCLE_LBI...	-0.016312	1.000000



*Figure 20: Scatterplot between current bilateral aid and current real GDP for Zambia*

**Lagged Output Correlation**

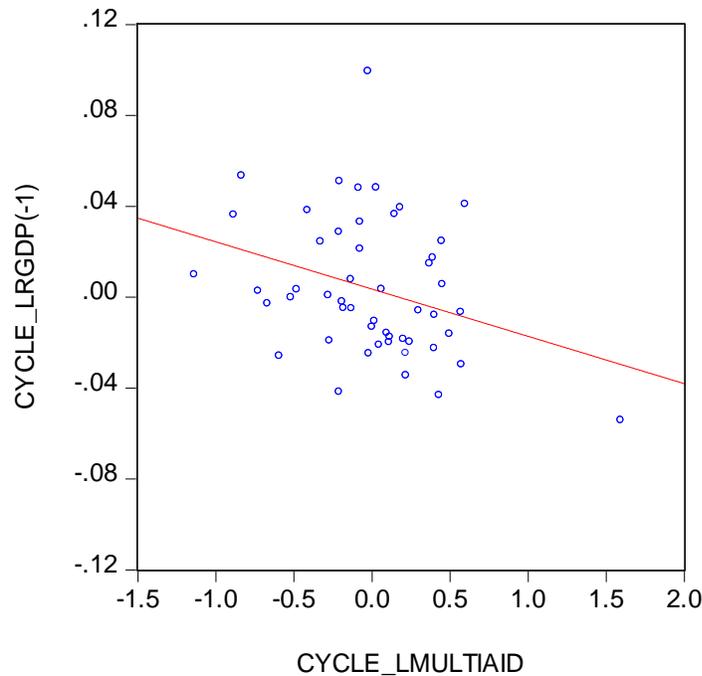
Table 12 below shows the correlation between previous real GDP and current multilateral aid in Zambia. With a correlation coefficient of -0.32, there is a negative relationship between multilateral aid and when real GDP is lagged one year. This is a clear indication that when Zambia performs badly in the previous year, they receive a higher amount in multilateral aid and when they perform well, the country receives a lower amount of aid.

Table 13

*Correlation between current multilateral aid and previous real GDP for Zambia*

	CYCLE_LMULTIAID	CYCLE_LRGDP(-1)
CYCLE_LMULTIAID	1.000000	-0.319382
CYCLE_LRGDP(-1)	-0.319382	1.000000

Scatterplot between current multilateral aid and previous GDP



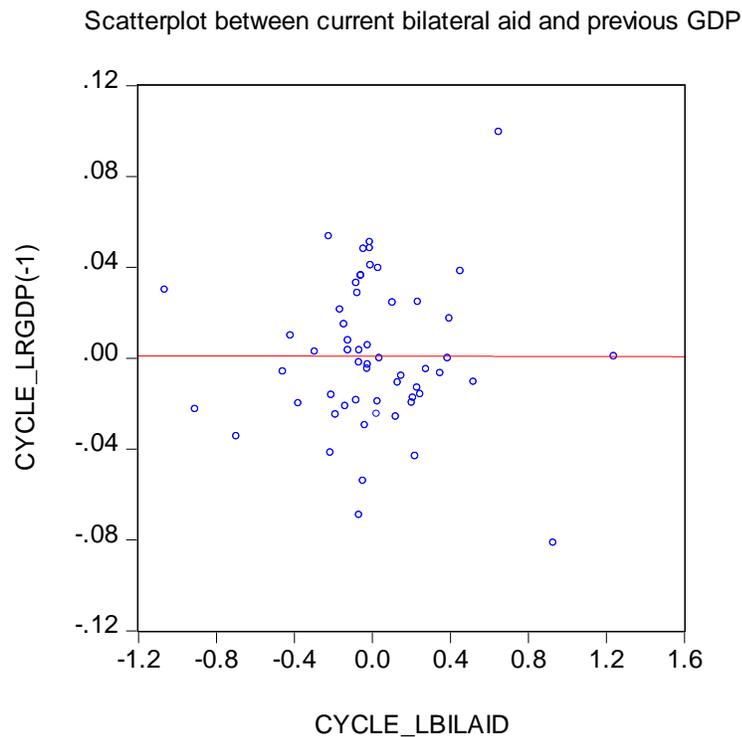
*Figure 21: Scatterplot between current multilateral aid and previous real GDP for Zambia*

Table 14 below shows the correlation between current bilateral aid and previous real GDP for Zambia. With a correlation coefficient of -0.00144, there is almost no relationship between previous GDP and current bilateral aid. Therefore, the amount of bilateral aid Zambia receives is not dependent on whether they performed well or not the previous year.

Table 14

*Correlation between current bilateral aid and previous real GDP for Zambia*

	CYCLE_LBILAID	CYCLE_LRGDP(-1)
CYCLE_LBILAID	1.000000	-0.001447
CYCLE_LRGDP(-1)	-0.001447	1.000000



*Figure 22: Scatterplot between current bilateral aid and previous real GDP for Zambia*

### Lead Output Correlation

The correlation between current multilateral aid and next year's GDP revealed almost no relationship between the two variables. This shows that when Zambia receives multilateral aid, it does not have any relationship with their performance the following year. This is shown in the correlation coefficient of -0.0042 in table 13 and graphically shown in figure 20 below.

Table 15

*Correlation between current multilateral aid and next year's real GDP for Zambia*

	CYCLE_LMULTIAID	CYCLE_LRGDP(1)
CYCLE_LMULTIAID	1.000000	-0.004233
CYCLE_LRGDP(1)	-0.004233	1.000000

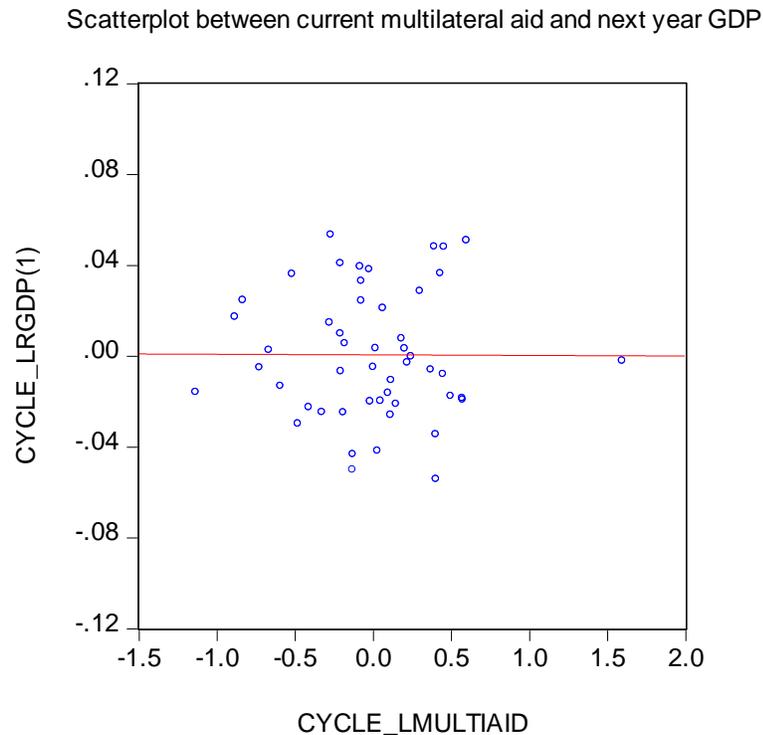


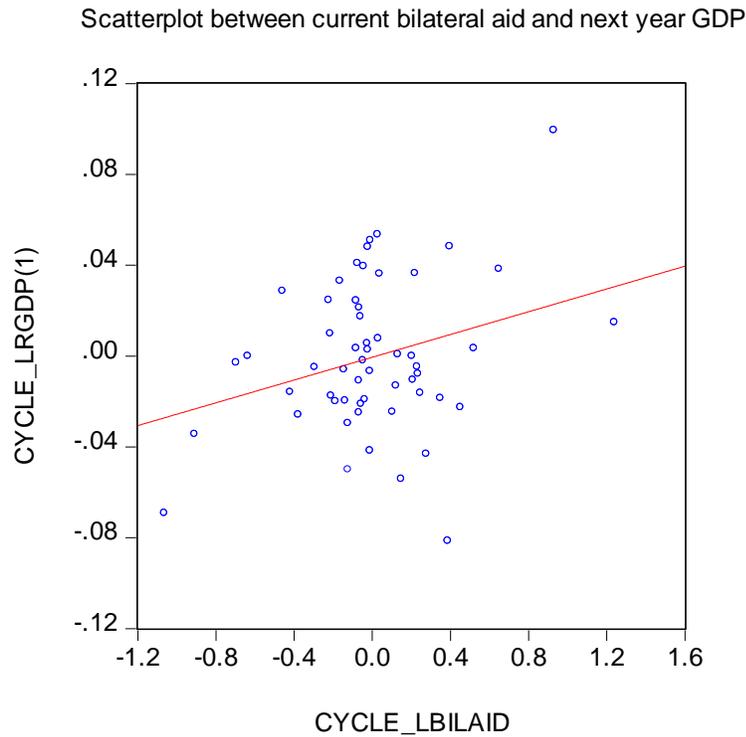
Figure 23: Scatterplot between current multilateral aid and next year's real GDP for Zambia

Bilateral aid rather revealed a different result. There is a positive relationship between bilateral aid and real GDP for Zambia as shown in figure 24 below. The correlation coefficient is 0.289 from table 16 below. This is a clear indication that Zambia uses the bilateral aid they receive to grow.

Table 16

*Correlation between current bilateral aid and next year's real GDP for Zambia*

	CYCLE_LBIL AID	CYCLE_LRGDP(1)
CYCLE_LBIL AID	1.000000	0.288906
CYCLE_LRGDP(1)	0.288906	1.000000



*Figure 24: Scatterplot between current bilateral aid and next year's real GDP for Zambia*

### **Inferential Statistics**

This section aims at presenting the results of the multiple regression analysis. This will help in estimating the relationship between foreign aid and economic growth for both Ghana and Zambia. The purpose of this is to examine whether foreign aid is growth promoting or growth retarding in the case of Ghana and Zambia. Results from the regression will inform development policy in these two countries.

Real GDP served as a proxy for economic growth while official development assistance which has been decomposed into multilateral aid and bilateral aid is the main variable of interest. Other variables of interest included in the regression are capital, foreign direct investment, life expectancy, real effective exchange rate, government expenditure, inflation, and aid volatility. These variables are included because they simultaneously affect the economic growth so adding them would hold them constant. The analysis was conducted using Microsoft Excel and Eviews.

### **Multicollinearity Test**

One of the assumptions underlying multiple regression is that there should be no exact linear relationship among the independent variables. This means that the variables must not be perfectly correlated with each other. As such, a correlation matrix for the variables are shown in table 9 and 10 below for Ghana and Zambia respectively. This is done to ensure that there is no issue of multicollinearity. Multicollinearity is a problem that needs to be addressed because it may lead to biased results and statistical inference may not be made about the data. The correlation between the variables as observed are less than 0.9, therefore, the problem of multicollinearity is not severe.

Table 17

*Correlation matrix for Ghana*

Correlation Matrix - Ghana										
	RGDP	MULTIAID	BILAID	CAP	FDI	LE	REER	GOVE	INF	AIDV
RGDP	1									
MULTIAID	0.805944	1								
BILAID	0.77365	0.804389	1							
CAP	0.682276	0.558811	0.669227	1						
FDI	0.893221	0.664613	0.706802	0.655879	1					
LE	0.823493	0.895193	0.811637	0.558658	0.794867	1				
REER	-0.37681	-0.4958	-0.53795	-0.64746	-0.32467	-0.57891	1			
GOVE	0.624158	0.336217	0.419289	0.505829	0.651129	0.26104	-0.48205	1		
INF	-0.31008	-0.25865	-0.46545	-0.43556	-0.44561	-0.18399	0.748285	-0.39328	1	
AIDV	0.404917	0.327541	0.233487	0.203155	0.565415	-0.02237	-0.07726	0.499346	-0.20852	1

Data Source: Author's Estimates

Table 18

*Correlation matrix for Zambia*

Correlation Matrix - Zambia										
	RGDP	MULTIAID	BILAID	CAP	FDI	LE	REER	GOVE	INF	AIDV
RGDP	1									
MULTIAID	0.229066	1								
BILAID	0.554842	0.434881	1							
CAP	-0.39677	-0.43587	-0.73278	1						
FDI	0.672796	0.250632	0.467533	-0.51085	1					
LE	0.782546	-0.16891	0.205741	0.101325	0.230985	1				
REER	-0.63323	-0.23703	-0.31955	0.540755	-0.69977	-0.22905	1			
GOVE	0.179628	-0.33436	-0.24823	0.50085	-0.11341	0.537127	0.063445	1		
INF	-0.54637	-0.03537	0.049066	-0.14381	-0.20082	-0.52569	0.716801	-0.60373	1	
AIDV	-0.23511	0.727725	-0.15624	0.047976	-0.12193	-0.30027	0.018072	-0.15276	0.065981	1

Data Source: Author's Estimates

**Unit Root Tests**

Stationarity in the analysis of time series data is very important. Unfortunately, a time series data may be non-stationary. This can affect the results and may lead to spurious regression

if not corrected. When this happens, the results may indicate a relationship between the variables when such relationship does not exist. Therefore, a unit root test was conducted in order to test if the data used in this study is stationary and appropriate for use. In this study, the Augmented Dickey-Fuller (ADF) Test was used to test for stationarity. The hypothesis tested is:

Null hypothesis: There is a unit root

Alternate hypothesis: There is no unit root

Using the Augmented Dickey-Fuller test, we fail to reject the null hypothesis that there is a unit root in the data when the probability is greater than 0.05. Hence, a p-value greater than 0.05 means that the variable has a unit root and thus, not stationary. Using Eviews for the test, it was revealed in the case of Ghana that AIDV, BIL AID, INF were stationary at the level whereas CAP, FDI, GOVE, MULTIAID, REER and RGDP, LE were not stationary at the level. They all assumed stationarity at the 1<sup>st</sup> difference except LE which became stationary at the 3<sup>rd</sup> difference. For Zambia, AIDV and BIL AID were stationary at the level whereas all other variables were not stationary at the level but became stationary at the 1<sup>st</sup> difference.

### **Regression Output**

In estimating the relationship between foreign aid and economic growth, the ordinary least squares method was used in estimating the parameters in the equation.

### **Ghana**

The regression output for Ghana is indicated below:

$$RGDP = -0.00417 - 0.00407MULTIAID + 0.021CAP - 0.011FDI + 3.633LE \\ - 0.0336REER + 0.0555GOVE - 0.0217INF + 0.006AIDV$$

Table 19

*Regression output for Ghana*

N = 35 R-squared = 57.8%

OLS Results, Dependent variable: Real GDP				
	Coefficient	Standard Error	T-stat	P-Value
C	-0.00417	0.1266	-0.0329	0.9739
MULTIAID	-0.00407	0.0158	-0.2577	0.7986
CAP	0.02108	0.03379	0.6238	0.5381
FDI	-0.0011	0.00868	-0.1295	0.8979
LE	3.633	12.1485	0.29906	0.7673
REER	-0.0336	0.0244	-1.3802	0.1793
GOVE	0.0555	0.0358	1.5512	0.1329
INF	-0.0217	0.0103	-2.09633	0.0459
AIDV	0.006	0.00585	1.03155	0.3118

Data source: Author's Estimates

**Zambia**

The regression output for Zambia is indicated below:

$$\begin{aligned}
 RGDP = & 0.079 + 0.0035MULTIAID - 0.0306CAP + 0.263FDI - 53.1304LE \\
 & + 0.00339REER + 0.15548GOVE - 0.00026INF - 0.0023AIDV
 \end{aligned}$$

Table 20

*Regression for Zambia*

N = 29 R-squared = 60.9%

OLS Results, Dependent variable: Real GDP				
	Coefficient	Standard Error	T-stat	P-Value
C	0.079	0.0988	0.7994	0.4334
MULTAID	0.0035	0.00901	0.3975	0.6952
CAP	-0.0306	0.02516	-1.2169	0.2378
FDI	0.0263	0.00901	2.8985	0.0089
LE	-53.1304	11.7293	-4.5296	0.0002
REER	0.00339	0.06365	0.05334	0.9580
GOVE	0.15548	0.03342	0.4652	0.6468
INF	-0.00026	0.0169	-0.0154	0.9878
AIDV	-0.0023	0.00537	-0.4292	0.6723

**Co-efficient of Determination**

The coefficient of determination is a measure of good fit that determines how good the model is. This is measured by the R-squared and it reveals how much the independent variables explain the variations in the dependent variable. The R-squared for the equation for Ghana is 57.8% while that of Zambia is 60.9%. This shows that the variables used in the model explain more than half of the variations in Real GDP.

### Standard Error

The standard error measures the accuracy of the estimate. It is also known as the standard deviation of the of the sample mean and the higher the figure, the more spread the data is. The standard errors for all the variables under consideration in this study are small which shows that the sample used is a good representative of the population.

### Heteroskedasticity Tests

One of the assumptions underlying ordinary least squares estimates is constant variances of the errors. This is expressed mathematically as  $Var(\varepsilon_i) = \sigma^2$ . When the variance of the error is not constant, it is known as heteroskedasticity. The Breusch-Pagan-Godfrey test was used to test for heteroskedasticity.

Null hypothesis: There is no heteroskedasticity

Alternate hypothesis: There is heteroskedasticity

Table 21

#### *Breusch-Pagan-Godfrey test for heteroskedasticity for Ghana*

Heteroskedasticity Test: Breusch-Pagan-Godfrey  
Null hypothesis: Homoskedasticity

F-statistic	0.880799	Prob. F(8,26)	0.5453
Obs*R-squared	7.462957	Prob. Chi-Square(8)	0.4876
Scaled explained SS	9.502605	Prob. Chi-Square(8)	0.3017

Table 22

*Breusch-Pagan-Godfrey test for heteroskedasticity for Zambia*

Heteroskedasticity Test: Breusch-Pagan-Godfrey  
 Null hypothesis: Homoskedasticity

F-statistic	1.177272	Prob. F(8,20)	0.3598
Obs*R-squared	9.284299	Prob. Chi-Square(8)	0.3189
Scaled explained SS	2.845604	Prob. Chi-Square(8)	0.9437

The output for the test for heteroskedasticity is shown in table 21 and 22 above. The probability is greater than the significance level of 0.05 for both Ghana and Zambia, therefore, we fail to reject the null hypothesis that the variance of the error term is constant. This shows that the results of the ordinary least squares are reliable.

### **Discussion of Results**

This section of the paper presents an analysis of the results obtained above. It includes the results obtained in the correlational analysis and the inferential statistics. The discussion will allow the results of the study to be compared to other scholarly research.

With regards to the procyclicality and countercyclicality of aid, the results from this study deviate from the findings of Pallage and Robe (2001). Their research revealed that foreign aid is procyclical for most African countries including Ghana and Zambia. This research, however, shows that there is a negative relationship between multilateral aid and growth: indicating that aid is countercyclical. However, bilateral aid showed almost no relationship between aid and growth for both Ghana and Zambia, suggesting that bilateral aid is acyclical.

Another notable outcome of this research is that aid donation in Ghana and Zambia is consistent with the two-gap model proposed by Chenery and Strout (1966). As the two-gap

model suggests, countries receive aid because of the presence of two gaps; which is an indication that the economy is plummeting. Since multilateral aid is countercyclical for Ghana and Zambia, foreign aid moves in the opposite direction with the economy and so Ghana and Zambia receive aid when they are in need. Therefore, aid has been a significant source of income for Ghana and Zambia in time of crisis.

The regression output helps in estimating the relationship between foreign aid and economic growth. From the regression output, the coefficient of multilateral aid for Ghana is -0.00407. This shows that there is a negative relationship between aid and economic growth. Because this is a log-log model, a 1% change in aid will lead to a -0.00407% fall in real GDP in Ghana. However, the p-value of 0.7986 is greater than the significance level of 0.05. Therefore, the relationship between growth and foreign aid is statistically insignificant.

In the case of Zambia, the regression yielded a positive relationship between multilateral aid and GDP. With a coefficient of 0.0035, when aid increases by 1%, real GDP in Zambia will rise by 0.0035%. The p-value of 0.6952 renders this relationship statistically insignificant. Therefore, for all the regression output generated from Eviews, we fail to reject the null hypothesis that there is no relationship between foreign aid and economic growth.

Additionally, the regression results show that foreign aid and specifically, multilateral aid is growth retarding and does not have a statistically significant relationship with real GDP in both countries. This affirms the claims of Rajan and Subramanian (2008) that there is little evidence of either a positive or negative relationship between the inflow of foreign aid and economic growth. Similarly, Easterly (2002) and Moyo (2009) state that aid has not been helpful in developing countries which is in line with the negative coefficient obtained for aid in the

regression output of this study. Therefore, Ghana and Zambia receive aid when they are in need albeit the negative impact on their economies worse.

## CHAPTER 5: CONCLUSION AND RECOMMENDATIONS

### Overview

This is the concluding chapter of the study. It presents a summary of the research problem, the underlying research questions, objectives, the methodology, and findings. It also provides some recommendations to policymakers and suggests areas for further studies.

### Conclusion

The purpose of this study was to ascertain whether foreign aid is procyclical or countercyclical. While preliminary research revealed that certain countries continue to receive aid even though they have achieved steady growth, this study sought to find out the business cycle condition of aid. That is, to find out whether foreign aid moves with the economic cycle or not. Secondary data were collected from the World Bank, the IMF, and the OECD. The data were collated in excel and imported to Eviews for analysis. Two analyses were conducted: correlation and multiple linear regression.

For the correlational analysis, the data were detrended and the correlation coefficient was computed between the cyclical component of aid and GDP. The results showed a negative correlation for both Ghana and Zambia and for multilateral aid. However, there seemed to be no relationship for bilateral aid for both countries. Hence, multilateral aid was countercyclical, whereas bilateral aid was acyclical in both countries. Also, the correlation between previous GDP and current aid revealed a negative relationship for both types of aid except bilateral aid in Ghana. This indicates that these two countries receive a higher amount of aid when they perform badly the previous year. A further correlation between current aid and next year GDP showed that Ghana and Zambia eventually perform worse when they receive aid, except for bilateral aid in Zambia which showed a strong positive relationship.

With regards to the regression analysis, the secondary data obtained was tested for fit for usage using multicollinearity and unit root test. The variables which were not stationary at the level were differenced  $n$  times till they assumed stationarity. The results of the regression analysis also proved that there exists a negative relationship between aid and economic growth for both Ghana and Zambia. However, the p-values were all greater than 0.05 signifying that the relationship is statistically insignificant.

### **Recommendations**

The research conducted revealed that foreign aid serves as an important source of income for Ghana and Zambia; especially for infrastructural projects. Even though the aid received by these countries is declining, the results show that they receive aid when they are in need and especially when they performed poorly (in terms of GDP) the previous year. Unfortunately, aid is established to be growth retarding for these countries.

This study, therefore, recommends to policymakers in Ghana and Zambia not to rely solely on aid as a means to spur growth in the economy. This was affirmed by the President of Ghana during Ghana's 61<sup>st</sup>-anniversary speech. Accordingly, the government's decision to embark on the "Ghana Beyond Aid" agenda is justified. Ghana is endowed with an abundance of natural resources such as gold, bauxite, oil among others. However, due to poor management and corruption; specifically stealing of funds in the public sector; the country has benefitted less from these natural endowments (Citifmonline, 2018). Thus, it is imperative that institutions are strengthened to support the government to achieve its policies and programs,

As opined by Alhassan (2016), a country that is highly indebted and wallows in debt can lose foreign investment, which is another source of capital. Therefore, the government of Ghana and Zambia should focus on effectively utilizing the countries resources to transform their

respective economies. Through value addition to natural resources of these countries; there would be a shift from an import-led economy to an export-led one.

### **Further Study**

This study employed purely quantitative analysis to describe the relationship between foreign aid and real GDP. Further studies can be done on the qualitative aspect where primary data from stakeholders would be collected to seek their views on the topic. This will help to reveal whether policymakers, for instance, consider aid to be procyclical or countercyclical.

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