FISCAL POLICY AND ECONOMIC DEVELOPMENT OF SUB SAHARAN AFRICAN COUNTRIES

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CERTIFICATION

This is to certify that this work "Fiscal Policy and Economic Development of Sub Saharan African Countries" was carried out by **Njoku, Charles Odinakachi (20104842528)** in partial fulfillment of the requirements for the award of the Degree Doctor of Philosophy (Ph.D) in Financial Management Technology in the Department of Financial Management Technology of the Federal University of Technology, Owerri.

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DEDICATION

This work is dedicated to God the Almighty, who makes all things possible as it pleases Him and to all Post Graduate Students of the Department of Financial Management Technology.

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ABSTRACT

This research work investigated the effect of fiscal policy on economic development of Sub Sahara African Countries with emphasis on Nigeria and Ghana. The objectives of the study were to determine how fiscal policy affects economic growth, human development, Unemployment and poverty rates in Nigeria and Ghana; for the period 1986-2017. The study made use of secondary data collected from, Central Bank of Nigeria Statistical Bulletin,National Bureau of Statistics, Bank of Ghana Statistical Bulletin 2016, Ghana Statistical Services, International Monetary (IMF) Fund financial statistics Year Book and World Bank's African Database. Econometric tools of Philips-Perron Unit Root Test, Johansen Cointegration test, Vector Error Correction Mechanism and least squared analysis were employed for data analysis. The unit root test conducted showed that all the variables were stationary at first difference. The Johansen Cointegration Test suggested that fiscal policy has a long run relationship with economic development. The results of the Vector Error Correction Mechanism showed that: Fiscal policy has a significant long run relationship with Economic Growth in Nigeria with f statistic 71.1303 (Prob. 0.000) at 5% significance level. Fiscal Policy also has a long run effect on Economic Growth in Ghana showing f statistic value 3.580 (0.00839) at 5% level of significance. Fiscal policy has no significant long run effect on Human Development Index in Nigeria, but Fiscal Policy has a significant short run effect on Human Development Index in Nigeria.Fiscal policy does not have significant effect on poverty reduction in both Nigeria and Ghana.Fiscal policy has no significant long run effect on unemployment in Nigeria with f statistic 1.06894 (Prob. 0.429) at 5% level of significance , while fiscal policy has a significant long run effect on unemployment in Ghana with f statistic 2.7979 (Prob. 0.0280) at 5% level of significance . This works also reveals that recurrent expenditure in Ghana is associated with a 0.8332 unit change in poverty, a -01.9366 unit change in unemployment, a 10.2918 unit change in Human Development Index and a 0.4746 unit change in Gross Domestic product on average ceteris paribus in the long run. Showing, that recurrent expenditure has significant long run effect on unemployment reduction, poverty reduction, Human Development Index and Economic Growth in Ghana in the long run on average ceteris paribus. Based on the findings, the research recommends among others that there is an urgent need to increase expenditure in the direction that will affect the income of the low income earners that will help Nigeria enhance economic growth, enhance the Human Development Index, generate employment and reduce poverty. There is need for a restructured revenue base to emphasis more on tax revenue to reduce the dependence on oil revenue in Nigeria and Ghana in order to finance fiscal policy expansion rather than embarking on borrowing which increases the burden on the poor. This research work has developed a model that defines fiscal policy variables (Tax Revenue, Oil Revenue, Capital Expenditure, Recurrent Expenditure and Deficit Financing). It has also discovered that for Nigeria to achieve a result similar to Ghana in tackling the macro economic problems facing the country, Nigeria government must increase expenditure in the direction that affects the low income earners.

KEY WORDS: ***Tax Revenue, Oil Revenue, Capital Expenditure, Recurrent Expenditure, Deficit Financing, Unemployment, Economic Growth, Human Development, Poverty Reduction.***

CHAPTER ONE

INTRODUCTION

1.1 Background Information

The use of fiscal policy measures is very essential in every developing country as it is a major tool for economic stabilization and development (Ocran, 2009). Fiscal policy means the government actions that use public revenue (usually tax) and expenditure in order to achieve its macro-economic objectives (Obi, 2007). It is governments' use of expenditure, revenue (tax) and deficit financing to regulate the level of economic activities in an economy so as to achieve enhanced economic growth, poverty reduction and employment generation (Ugwuanya and Ugwunta 2017). So, fiscal policy occurs when the government varies its revenue (tax) and spending policies to achieve economic stabilization enhance economic growth and development. Fiscal policy serves as an economic "shock absorber" in specific areas of development of an economy. The Keynesian economics believe that when government varies the tax level and government spending, it influences the economy's aggregate demand and the level of economic activity in the country. The three main instruments of fiscal policy are: changes in the level and composition of taxation, government spending in various sectors and government deficit financing. These governments variation in tax, expenditure and deficit financing are targeted at influencing these macroeconomic variables: Gross Domestic Product, inflation, employment, human development and reduce the level of poverty of any country. Government fiscal policy can also affect industrial development, agricultural development and financial development in the country (Babalola & Aminu, 2012).

Government uses fiscal policy to control aggregate demand in the economy, so as to achieve these economic objectives: price stability, full employment, stabilize business circle, influence interest rates and attain economic growth (Reem, 2009). Fiscal policy is associated with growth and development. It is believed that adequate and timely fiscal policy measures can be used to stimulate growth and development (Khosravi and Karimi 2010). Fiscal policy in itself involves the formulation of the tax structure and expenditure patterns and direction of these expenditures and taxes are specific in nature for results or changes.

Fiscal policy could be neutral, expansionary or contractionary depending on the objective it is expected to achieve. It is neutral when the economy is in a stable sate, if there is neither in economic recession or economic boom. At this level, the deficit financing is unchanged over time. Government spending, taxation and deficit financing are not varied in order to change level of economic activities in the economy. On the other hand expansionary fiscal policy is undertaking during economic recession. It involves government increasing spending and tax reducing to ensure that more money is in the hands of individuals in the economy. Contactionary fiscal policy occurs when increases tax and reduces government spending to influence the level of economic activities usually fight inflation in the economy when there is economic boom. Over the years, governments of African countries have adopted these fiscal policy measures to regulate the level economic activities in their countries,yet, in Nigeria, inflation rate is uncontrolled (O'Nwachukwu, 2017).

In the last four decades, Sub Sahara African countries have been experiencing increase in both revenue and expenditure. In Nigeria, Total government revenue in 1986 was N12.6 billion, this increases to N98.10billion in 1990. In the year 1996, federal government total revenue amounted to N1523.6billion which increased to N1, 906.16 billion in the year 2000. In 2006, the total government stood at N5,965.10, this continued to increase, from N7,303.67 billion in 2010 to N677.90 billion in 2016 (CBN, 2016).

On the other hand, government expenditure in Sub Sahara Africa has also been increasing, in Nigeria, Federal Government total expenditure in 1986 was N16.22Billion, but increased to N60.27Billion in 1990. In 1996 it stood at N337.22Billion and increased 701.06Billion in 2000 and increased up to N1938.00 in 2006. N4, 194.58 Billion in 2010 and in 2015, the total Federal Government expenditure was N4, 988.86 Billion and in 2017, Government expenditure amounted to N13, 198 billion (CBN, 2018). Again, government total expenditure (% of the budget) for Nigeria in 2015 is 11.806%. As a result, Nigeria is ranked 190 in words ranking to general Government Expenditure (% of GDP) in the year 2015 against the world's average value of 33.88% (Ayogueze & Anidiobu, 2017). Ogbole (2012) explained that government of Sub Sahara African countries have been using sectoral targeting of public expenditure in their bid to achieve income redistribution, encourage growth by enhancing productive capacities of the sectors for more employment (Obayori, 2016).

According to Nwezeaku (2010) the economies of Sub Sahara African countries have been faced with underdevelopment as a result of poor human development indices. This low Human development Index rating of the region is accounted for by the high level poverty, with a life expectancy of 55.2 years in the region, poor standard of living, high unemployment rate. As a result, their debt burden continued to increase thereby causing more government expansionary policies that do not tend to mitigate these economic problems. World Bank has reported that only about 1%(percent) of the entire population of Nigeria benefits from 80% of oil revenues in Nigeria thereby widening the gap between the rich and the poor.

The rising profile of Nigeria's debt (both domestic and external debts) is worrisome, and it continues to skyrocket showing the fiscal indiscipline in the country. According to Odewunmi (2012) Nigeria debt profile stood at $32.5billion in September 2010, N5, 241,667m as at September 2010, as at 2000, the total debt of Nigeria was N3, 995,638m. The debts continued to increasing till 2006 when it came down to (N3, 177,409m) as a result of debt cancellation agreement between Nigeria and Paris Club (Okafor, 2012). Thereafter, it continued to rise again and reached N5, 241,667m in 2010 and in 2015 the Nigerian total external debt amounted to N2.11 trillion while the domestic debt stock stood at N10.6trillion. The federal government's domestic debt stock stood at N8.8 trillion ($44.9 billion). The government financed part of the 2016 budget of N6.08 trillion ($30.71 billion) through domestic and foreign borrowings. In 2016 total deficit was N2.22 trillion ($11.21 billion), representing a 2.16% of the total GDP of the country and this took the country's debt profile to 14% of GDP. As at December 2019, the total public debt of Nigeria stood at N32.92Trillion and it still continues to rise (Omodera 2019).

Macro dynamic in Sub Sahara Africa has been dominated in the past by fiscal instability. There have been a strong deficit and debt as a result of government revenue volatility. Fiscal policy in Nigeria has been affected by crude oil price volatility which has affected both revenue and expenditures as about 75% of revenue of the country come from crude oil. In Nigeria, since 1991, both revenue and expenditures have been very volatile. In period with high oil price 1996-2002, 2008-2014, revenue and expenditure increased sharply. Towards the end of 2014 oil price began to fall, and this affected the revenue base of the country thereby plunging the economy into economic recession in 2016 (Ugwuanya & Ugwunta, 2017). The implication of such boom-bust fiscal policies is that it transmits the oil volatility to every sector of the economy and as such disrupts the flow of government services (Abdurrauf, 2015).

One of the major challenging development issues facing Sub Sahara African countries today is sustainable growth and development. That is why macroeconomic thinkers and policy makers focus on how to maintain macro-economic policy used is fiscal policy which has its cardinal tools as government revenue and government expenditure (Dada & Faronopo 2020).

Despite government increasing revenue, increasing expenditure and reducing fiscal deficits to achieve macroeconomic stability in Sub Sahara Africa, the rate of poverty has remained extremely high with more than half of the countries in the region having more than 35% overty rate in their countries, most countries in the region could not attain Millennium Development Goals of eradicating poverty (Omodera 2019). In most Sub Saharan African economies there is a continuous rise in income inequality, which is responsible for the increased margin between the rich and the poor. The Graph below shows the poverty rate in Ghana and Nigeria.

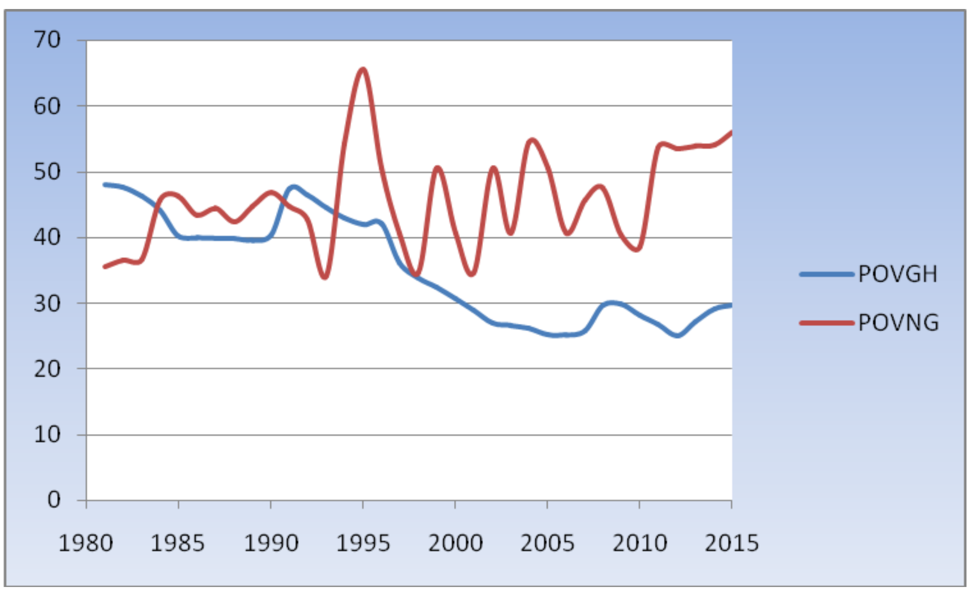

Figure 1: Graph of Poverty in Nigeria and Ghana:

Poverty reduction has been a major goal of Sub Sahara African economies (Agu, 2014). This is proved by the fact that various governments have over the years introduced different programmes to reduce poverty levels. Such programmes include: Nigerian Directorate of Employment (NDE) introduced in 1989 and the National Poverty Eradication Programme (NAPEP) introduced in 2001 which yielded little or result. Poverty in Nigeria has continued to increase over the years. Poverty was at its peak in Nigeria in 1995 which was as a result of low economic growth performance, weak governance and high debt burden. In Nigeria, corruption, poor program implementation and fiscal irresponsibility accounts for high level of poverty. Omodera (2019) explained that an effective anti-poverty fiscal policy depends on finding the critical right mix of the tools of fiscal policy which should necessarily be pro-poor for poverty reduction objectives to be achieved. He maintained that an anti-poverty fiscal policy must be one that generates growth. Considering the Gross Domestic Product (GDP), fiscal policy has a direct impact on consumption, investment and trade.

Zhattau (2013) reveals that from the revenue side of the fiscal equation, there is an influence on private consumption, private investment and the trade balance via adopted taxation policy. From the expenditure side, fiscal policy has an effect on government consumption and investment via the expenditure policy. This means that fiscal policy is an important instrument used to generate growth necessary for poverty reduction.

In Sub Sahara Africa, fiscal policy is used as a tool for income redistribution and poverty reduction. Government uses its expenditure targeting policy and direct transfers for this purpose. Tanzi (1996) explained that direct transfers are appositive means of achieving this, but it is less effective due to administrative inefficiencies and its possible impact on inflation. Government over the years has been using transfers and subsidies to firms in order to achieve income redistribution which aims at reducing poverty and enhancing growth.

Fiscal policy is also expected to reduce the rate of unemployment in an economy. As unemployment rate as a measure of the number of people that are actively searching for a job, has been a major economic challenge facing Sub Sahara Africa countries. In 1986, Unemployment rate for Nigeria was 7.0% while Ghana was 4.3%. This has continued to persist, in 2000, it was 10.36% for Ghana and was at its lowest rate of 4.0% which increased to 9.5% for Nigeria while that of Ghana dropped to 5.13% for Ghana in 2014. While unemployment in Ghana has continued to decrease, it has continued to increase in Nigeria. Unemployment rate in Nigeria increased from 14.2% in 2016 to 18.8% as at December 2017 (NBS 2018). The graph below shows the unemployment rate for Ghana and Nigeria.

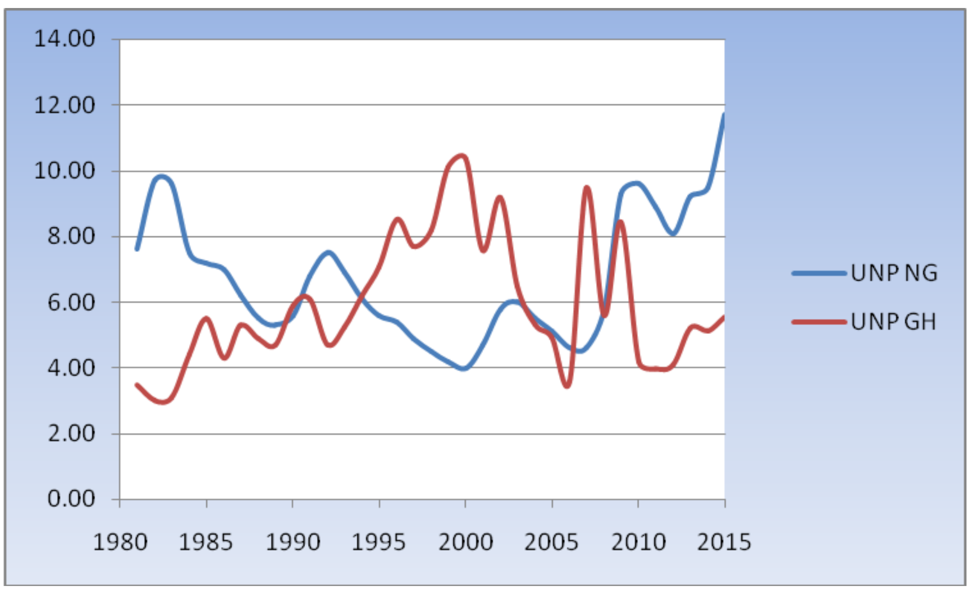

Figure 2: Graph of Unemployment rate in Nigeria and Ghana

Many developing countries that experienced economic transformation moved from primary production to an industrial production economy thereafter, to a more sophisticated service oriented economy, with considerable progress to becoming knowledge economies. Almost all Sub Saharan African countries have remained primary producers without having the capacity to refine their products to a finished product, except Mauritius and South Africa. According to Eze & Ogiji (2013), other developing countries in other continents have made remarkable progress in human development, mostly in the areas of access to education, life expectancy and standard of living, while almost all Sub Saharan African countries remain at the lowest rank of the Human Development Index (HDI).Sub Saharan Africa remained only region of the world with continuous increase in the rate of poverty with Nigeria as the poverty capital of the world, unlike other continents of the world. Sub Saharan Africa still remains the home of more than thirty percent of the world's poor, despite constituting of about 10% of the world's population. With the 2018 Word bank extreme poverty definition as those living below $1.90 dollars per day, a vast majority of those in extreme poverty are in Sub Saharan Africa with over 41% living in extreme poverty in the region.

Dada & Faronopo (2020) believe that fiscal policy enhances economic growth and development of an economy through tax, government spending and deficit financing. The question now is what is the best combination of these fiscal policy variables that will be best for the economies of Sub Sahara African countries? And what kind of revenue/expenditure combination should be adopted by Sub Saharan African countries in order to achieve these objectives of poverty reduction, reduction in unemployment, enhancement of standard of living, enhanced access to education, and increased life expentancy?

In reality, the engine that drives the economy towards the achievement of many economic transformation objectives of economic development and growth, price stability over time, reduction in the rate of unemployment, income redistribution and enhanced human development index is fiscal policy (Audu, 2012). According to Chuku, (2015) in Sub Sahara African economies, the economic policy objectives of fiscal policy have been implemented to a greater or lesser degree, as the one and overriding objective, of achieving economic growth and development. The reliance on fiscal policy in economies of Sub Sahara African countries for the achievement of the economic development objectives in the region seem to have failed in achieving its intended objectives (Okafor, 2012). This research shall therefore, discover the effect of fiscal policy on the economic development of Sub Sahara Africa and how effective has been her attendants' weapons on Nigeria and Ghana.

1.2 Problem Statement

When the government uses fiscal policy, it is expected to stimulate the level of aggregate demand in the economy, in order to achieve the economic objectives of price stability, reduce unemployment rate, stabilize business circle, influence interest rates and attain economic growth and development of any nation especially in developing countries. But, Chuku (2015) believed that despite government's use of fiscal policy measures inthe management of the economies of Sub Saharan Africa, in order to achieve macroeconomic stability the economies of the region have not been performing.

Sub-Saharan African countries have been experiencing high inflationary trend, volatile foreign exchange rates, the fall and rise of gross domestic product, unfavorable balance of payments, high level of poverty as well as increasing unemployment rates which are symptoms of growing macroeconomic instability (Ugwuanya & Ugwunta, 2017). As such, their economies are unable to function well in an environment where there is low capacity utilization attributed to revenue decline as a result of mono-dependency on oil revenue, the high fiscal irresponsibility and corruption (Hassan, et al 2003).

National economic management has become a difficult task, as the economies have to contend with volatility of revenue and expenditure. The widespread lack of fiscal discipline was further worsened by the poor co-ordination of fiscal policy measures among the tiers of government (Ebiringa & Chales-Anyaogu, 2012). Also, there is a weak revenue base arising from mono dependence on oil revenue, high marginal tax rate with very narrow tax base, resulting in low tax compliance.

In response to the declining economic and social indicators for Sub Sahara African countries, their governments have taken fiscal policy measures to strengthen their economies. Nigeria and Ghana over the years have adopted expansionary fiscal policy measures which are expected to increase consumption and increase public and private sector investment leading to creation of more jobs. This increased consumption was expected to create a virtuous circle that generates more investment, consumption and employment in the economy. Some of the other fiscal policy measures adopted by Ghana and Nigeria over the years include: expansionary fiscal policy, the structural adjustment program, cutting down of government expenditure, taxing income and government borrowing (Omoniyi, 2018).

But, with the high level of unemployment, high poverty rate, declining Gross Domestic Product, recession and depression in most African economies especially Nigeria, it seems that these fiscal policies have not achieved their target objectives. Singh (2018) explained that the reduction in the level of unemployment in a country is the most difficult challenge facing every developing nation where majority of the people are poor. Reem (2009) explained that over the years, Nigeria, Ghana and other Sub-Sahara African countries have had fiscal policy target on bridging the gap between the rich and the poor, through government revenue/tax and expenditure policies;redistribution of the total tax burden towards the rich via personal and corporate income taxes and reallocations of public spending to favor the poor and the marginalized groups aimed at reducing poverty and inequality. Poverty rate remained very high, with about 55percent of the Nigerian population estimated to be living below the $1 per day consumption bar (World Bank, 2014).In June 2018, Nigeria was declared the poverty capital of the world with over 86 million Nigeria living in extreme penury while unemployment rose to 23.1% in September 2018, Unemployment in Ghana stood at 6.71% while 23.4 of Ghana population live below the poverty line (UNDP, 2018).

The important question is: To what extent has fiscal policy affected economic growth, Human Development Index, Poverty Reduction and employment generation in Sub Saharan Africa?

1.3 Aims and Objectives

The aim of the study is to examine the effect of fiscal policy on the economic development of Sub Saharan Africa. The specific objectives of this study are to:

(1) Determine the effect of some selected fiscal policy variables on economic growth in Sub Saharan Africa.

(2) Examine the effect of some selected fiscal policy variables on Human development in Sub Saharan Africa.

(3) Ascertain the effect of some selected fiscal policy variables on Poverty reduction in the sub Saharan African.

(4) Examine the effect of some selected fiscal policy variables on Unemployment in Sub Saharan Africa.

1.4 Research Questions

In line with the objectives, the following research questions are therefore raised to guide the study;

(1) To what extent has fiscal policy affected economic growth in Sub Saharan Africa?

(2) To what extent has fiscal policy affected human development Sub Saharan Africa?

(3) To what extent has Fiscal policy affected poverty reduction in Sub Saharan Africa?

(4) To what extent has fiscal policy significantly affected unemployment in Sub Saharan Africa?

1.5 Research Hypotheses

The objectives and research questions therefore informed the testing of the following research hypotheses;

H_{01}: Fiscal policy has no significant effect on economic growth in Sub Saharan Africa.

H_{02}: Fiscal policy has no significant effect on human development in Sub Saharan Africa.

H_{03}: Fiscal policy has no significant effect on unemployment in Sub Saharan Africa.

H_{04}: Fiscal policy has no significant effect on poverty reduction in Sub Saharan Africa.

1.6 Justification of Study

It has been revealed that research conducted in this field of study has great importance to policy makers, the government and researchers. In the research of Audu (2012), it has been confirmed that there is a significant positive relationship exist between economic development and fiscal policy in Nigeria. He went further to conclude that Fiscal policy contributes positively to economic growth and development in Nigeria. Eze & Ogiji (2013) in his research revealed that depending on the level of significance of the coefficient and p-value, government spending has significant effects on economic development. He also concluded that fiscal policy and economic development have a long run relationship existing between them.

Although a wealth of literature exists explaining the relationship that exists between fiscal policy and economic growth in Nigeria, there is little attention on the effect of fiscal policy on economic development of Sub Sahara African countries. This research work seeks to fill this gap in literature as it focuses on the effect of fiscal policy on Economic growth(Real Gross Domestic Product), Unemployment, Human Development Index, Poverty, in Nigeria and Ghana for the period 1986-2017.

The study will contribute to a large extent in assisting the government Sub Sahara African countries, their policy makers, economic planners, add to existing research in this area of economics and finance and contributes to the academia in general by adding to existing knowledge. As this provides a clear understanding to the government of the region on how to be prudent in managing public funds which would bring about economic growth and development in the region. It is also of immense benefit at it enlightens the general public, policy makers, economic planners, authorities on the impact of fiscal policy on the economic development of the Sub Sahara African countries. The analysis of the target variables explains how these dependent variables relate to economic growth and their contributions to poverty reduction, human development and unemployment reduction. This enables the government of the region and other developing countries take some policy measures that would catalyze economic development. Hence, the significance of this study is based on the premise that governments can stimulate economic development through the use of fiscal policy tools.

To the academia, the findings of the study adds to the existing literature in the area, as this research compares the impact of Fiscal Policy on the economic development of Ghana and Nigeria as a representation of Sub Sahara African countries.

Based on the empirical findings and analysis of this research, the results of the study would immensely benefit researchers who will rely on their contributions to existing knowledge for further research.

The findings of this research will assist government institutions in Sub Sahara Africa in evaluating the impact of the fiscal policy on economic development of their region. This research work would also be of immense benefit to the policy makers and economic planners in terms of using its findings in formulating and implementing appropriate policy measures towards enhancing economic growth and facilitating economic development in Sub Sahara Africa.

1.7 Scope of Study

This work is an assessment of the effect of fiscal policy on economic development in Sub Sahara African countries using data from Nigeria and Ghana. The scope of this study covers the period 1986-2017. The period was long enough to capture the effect of fiscal policy on economic development.This research would compare Fiscal Policy in the Ghana (1986-2017) and Fiscal Policy in Nigeria (1986-2017) and their level of contribution to the economic development. This is aimed at empirically analyzing how fiscal policy has impacted on the economic development using the following dependent variables: Real Gross Domestic Product, unemployment, human development Index and Poverty Index as parameters for Economic Growth and Development in Nigeria and Ghana.

The study employed the following explanatory variables: Tax Revenue, Oil Revenue, Capital Expenditure, Recurrent Expenditure, deficit financing as tools for fiscal policy.

As this study examines the impact of fiscal policy on economic development of sub-Saharan African countries, Nigeria and Ghana are the choice countries to represent Sub-Saharan.

The researcher chose the countries based on the following reasons:

Both countries adopted the Structural Adjustment Program (SAP). Structural Adjustment Program is a comprehensive economic program that major international lenders require of the developing nations when they are granted a loan. As free market economic reforms imposed on developing nations as a condition for receipt of loans. The main aims of the Structural adjustment Program (SAP) were to: restructure and diversify the economy to achieve fiscal stability and positive balance of payments, reduce inflation and dominance of unproductive investments in the public sector. Some of those required economic reforms include: extreme free market strategies, monetary austerity, fiscal austerity, privatization and financial liberalization, deregulating banking sector, cutting expenditures, removing trade barriers, strict adherence to balanced budgets, building up export economies, enhancing rights of foreign investors, devaluing currencies against the dollars, removal of price control and trade subsidies to reduce government expenditures, abolishing food, agricultural subsidies in order to reduce government spending, deep cut of social programs usually in health, education and housing, and massive lay off of civil servant all aimed at cutting government expenditures.

Ghana implemented the structural adjustment program (SAP) in 1983 while Nigeria implemented the SAP in 1986. But, when the structural Adjustment Program failed in achieving the intended specific objectives both countries adopted both expansionary and contractionary fiscal policy measures. Over the last three decades Nigeria and Ghana have been adopting the expansionary fiscal policy with the objective of enhancing economic growth, reducing poverty and unemployment levels, enhancing life expectancy, achieve increase access to education and enhance the standard of living of the people in their countries. Expansionary policy was adopted during the contractionary phase of the countries' business cycle as it is in other Sub Saharan African countries. The government of Ghana and Nigeria want to reduce unemployment, reduce poverty,and enhance economic growth and human development index, while, they seek an end toeconomic recession in orderto prevent economic depression, where economic recession has occurred.

CHAPTER TWO

LITERATURE REVIEW

2.0 Preamble

A literature review consists of scholarly papers, which includes the current knowledge including theoretical and empirical findings and methodological contributions to a particular field of endeavor. So, it is the process of summarizing, paraphrasing and/or commenting on the theories, methods and findings that are related to the research topic/problem in any field of study (Chen and Gupta, 2006). Therefore, in this section, the researcher will examine the theories and concepts that define and shape fiscal policy and economic growth and development under the following broad headings:

1. Conceptual Review
2. Theoretical Review
3. Empirical Review.

2.1 Conceptual Review

This section will discuss the various concepts that could help the researcher establish a link between fiscal policy and economic development and their relevance to achieving the objectives of this study.

2.1.01 The Concept Of Fiscal Policy

Anyanwu (1997) defined Fiscal Policy as the use of the powers of taxation, public expenditure and other financial programs embodied in annual budgets by government to achieve earmarked national goal.

Indeed, Fiscal Policy is a major tool for economic stabilization and for development to be sporadic. This is a major tool that is involved in thetool that is used to regulate and control the volume, cost as well as the availability and the direction of money in an economy in order to achieve the desired macroeconomic objective and to achieve a counter cyclical effect on any Economy (Hassan,Waheeduzzaman, Rahman, 2003).

According to Tanzi and Zee (1996), fiscal policy has three main cardinal instruments namely: government spending, taxes and deficits. Okafor (2012) opined that economic policy instruments are used to achieve specific macroeconomic objectives of full employment, efficient production, price stability, balance of payments equilibrium, efficient redistribution of national income in order to reduce the gap between the rich and the poor. The fiscal policy is also seen as economic measure that uses government spending and taxes to achieve governments' macro-economic growth and development. So, it describes how government varies government revenue (usually tax), expenditure and deficit financing in order to achieve the broad economic objectives of a nation. The government fiscal policy measures could be as an automatic stabilizers or discretionary fiscal policy measure. When fiscal policy is an Automatic stabilizer, government expenditure and/or taxation actions take place without any deliberate government control and it usually dampens the business cycle. But when it is discretionary, fiscal policy actions (government expenditure and taxation) are deliberately taken to achieve the target objectives of stabilization, growth and development (Appah, 2010).

According to Obayori (2016), the four main fiscal policy stances include:

(i) **Neutral fiscal policy**: This measure is usually undertaken when there is national income equilibrium; expenditure and taxation have a neutral effect on the level of economic activity (Omodera 2019).

(ii) **Expansionary fiscal policy:** This happens when government expenditure exceeds tax revenue. This measure is usually needed during economic recession recessions. This fiscal policy measure also known as reflationary fiscal policy.

(iii) **Contractionary fiscal policy:** This occurs when government increases tax and reduces spending, usually during inflationary trend. This contracctionary policy usually undertaken in order to pay down government debt.

(iv) **Tobynomics:** This is a fiscal policy measure that is aimed at maximizing revenue and increasing taxes without increasing government spending. This fiscal policy measure is adopted for the government to pay off debts and/or increase its capital reserves. But this policy is not usually popular (Brown & Jackson, 1994)

According to Appah (2010) these explanations may not always be true, even when there are no changes in spending or tax laws, cyclic fluctuations of economic activities could cause cyclic fluctuations of tax revenues, government spending and deficit financing, these are not considered to be policy changes. As it believed that there is a functional relationship between changes in the level of economic activities and the changes in government spending, tax and deficit financing. Therefore, government spending and tax revenue are normally replaced by cyclically adjusted government spending and cyclically adjusted tax revenue. So, a government budget that is balanced over the course of the business cycle may be considered to represent a neutral fiscal policy stance of an economy (Dada & Faronopo 2020).

The main objective of every economic policy is the attainment of a high level of economic growth and development both in the developed and the developing economies of the world. Fiscal policy objectives are aimed at regulating the level of economic activities in a country using government revenue (tax), government expenditure and deficit financing. This creates a stable macroeconomic environment for economic prosperity and stabilization which goes deep into the real sector to stimulate economic growth and development (Barro, 1992).

According to Amaja and Morrissey (2005), it is believed that the manufacturing sector development is the majorbases for determining a nation's economic efficiency. According to Babalola & Aminu (2012), no other sector of the ecobnomy is more important than the manufacturing sector and the Agricultural sector in a developing economy as they open up the economy for growth economic development.

However, after the discovery of crude oil in Nigeria in the late 1950's, the Nigeria moved from an industrial production dependence economy to a mono dependence on crude oil economy (Enache 2009). In spite of the Nation's vast oil deposits of natural resources, the World Bank HDI (2018) have revealed that a greater majority of Nigerians are poor with over 84.5 percent of the population living below $2 (two Dollars) per day and in 2019 Nigeria was declared the world poverty capital of the world, overtaking India. Again, the United Nations Human Development Index (2018) also ranked Nigeria 161 out of 189 countries with a HDI value of 0.539. This is a significant decline in Nigeria's human development ranking of 151 in 2004.

Government spends money on a variety of economic activities, from security to education and healthcare, as well as payments and other welfare benefits (Babalola & Aminu, 2012).

These expenditures are usually funded using: Taxation, Seigniorage, the benefit from printing money, domestic and external borrowing, from fiscal reserves, and governments' saleof fixed assets.

Borrowing: A fiscal deficit is usually funded by government's issuance of bonds: treasury bills, consoles and gilt-edged securities. These instruments have interest either fixed for a period or indefinitely payment of interest. If the capital and interest payments are so huge, a nation may likely default on its foreign debts, due to its huge burden on the economy. Public debt or borrowing refers to the government borrowing from the public. It may be domestic or foreign (Marco & Stephen 2014).

Consuming prior surpluses: When there is fiscal surplus, government usually saves for future purpose. This is either re-invested in local currency or any other financial instrument that may be traded when the resources are needed. This happens when the marginal propensity to save is strictly positive (Levine & Renelt, 2016).

Governments use its fiscal policy measures (Tax, government spending and deficit) to influence the level of aggregate demand in the economy so as to achieve economic objectives of price stability, full employment, and economic growth (Magazzino, 2010). economics believes that the best fiscal policy is to increase government expenditure and decreasing tax rates in order to stimulate aggregate demand usually during economic boom. Keynesians believe that this policy of increasing expenditure and reducing tax should be adopted during economic recession or when economic activities are low so as to build a framework for a strong economic growth in order to attain full employment. It is believed that, the deficits would result would be paid off by an expanded economy during economic boom that may follow (Babalola &Aminu, 2012).

According to Appah (2010) governments can use a surplus for two main purposes: either to slow down the rate of economic growth or to stabilize prices during the period of high inflation. Keynesian theory suggests that reducing government expenditure in an economy would reduce levels of aggregate demand as well as contract the economy, which will lead to price stabilization.

But most economists still doubt the effectiveness of fiscal stimulus. They center their argument on its crowding out effects. It is argued that government borrowing may lead to higher rates which may possibly offset the simulative impact of the government spending. During budget deficit, money is usually needed from both domestic and external borrowing and debt monetization. When governments finance a deficit through issuing of g bonds, interest rates may rise in the economy. This is caused by the crowding out effect of the government borrowing on the financial markets. This in turn, may lead to lower aggregate demand for goods and services, which is against the economic stimulus objective. Neoclassical economists place their emphasis on the crowding out effect of borrowing while Keynesians believe that fiscal policy could be effective in a trap while crowding out is minimal(Babalola & Aminu 2012),

But, mostclassical and neoclassical economists argue that crowding out is totally against any known fiscal stimulus, against the views of Keynesian economics (Appah,2010).

Classical economists believe that expansionary fiscal policy negatively affects net exports, which has a known mitigating effect on national income of a country. When government borrowing raises interest rates, foreign capital is attracted from foreign investors. As a result the bonds issued from the domestic economy executing expansionary fiscal policy would offer a higher rate of return (Easterly, 2005). So, private investors would compete with their government for capital by offering higher rates of return in order to finance their capital projects.

To purchase bonds from a certain country, the country's currency would be required by the foreign investors. This affects the foreign capital flow to the country which leads to fiscal expansion by increasing the demand for that country's local currency. This increase in the demand of the local currency would causethe country's currency to appreciate. This currency appreciation would cause goods originating from that country to cost more to foreigners. This would make foreign goods to cost less than they did before. As a result, exports decrease while imports increase and the country earns more (Abatta, Kehinde & Borarinwa, 2012).

Due to the inside lag (time of implementation) some economists don't believe in discretionary use of fiscal stimulus. This time of implementation is inevitably long due to the substantial legislative process involved in it. Again, the time lag between the time of implementation and the time the stimulus is felt (outside lag) may hit and already recovering economy and exacerbates the ensuing boom rather than stimulating the economy when it needs it (Adebiyi, 2011).

According to Appah (2012), some economists are usually worried about the potential inflationary effects as a result of increased demand as a result of fiscal stimulus. In reality, fiscal stimulus does not cause inflation trend when it uses resources idle resources. So, if a fiscal stimulus employs an unemployed, it has no inflationary effect. But, if the stimulus employs someone who already has a job, the stimulus is increasing labor demand while labor supply remains fixed, thereby stimulating both wage inflation and price inflation (Appah, 2012).

The government's fiscal policies on taxes and spending have a huge effect on economic growth and development. According to the Keynesian theory which proposes the use of fiscal policy to correct the imbalances in the economy, a government should adopt deficit financing to stimulate an economy that is already slowed as a result of economic recession, by increasing expenditure and reducing taxes (Adewale, 2018). So, in order to slow down an economy that is facing high inflationary pressures, government's fiscal policy should be targeted at increasing taxes and/or reducing its spending which would create budget surplus that drags the economy toward equilibrium. Stabilization policy requires the government to set a realizable fiscal target, have a good knowledge of how to vary tax, spending and deficit in order to achieve the desired economic objectives (Agu, 2014).

2.1.02 Objectives of Fiscal Policy

Anyanwu and Oaikhenan (1995) clearly highlighted the objectives of fiscal Policy as follows:

(i) Generation of the needed revenue for the government in order to provide the needed services to the society,

(ii) To diversify the sources of revenue of the country from a mono dependent crude oil-economy.

(iii) Reduce the tax burden on the citizens and the private investors,

(iv) Maintenance of national income equilibrium, reduce and control inflation, enhances economic growth, reduce Balance of Payments disequilibrium , and reduce unemployment in the country,

(v) Guarantee protection of the infant and domestic industries,

(vi) Promote self-reliance and development of the economy,

(vii) Reduction or elimination of government deficit financing,

(viii) Coordination of the internal sectors of the economy,

(ix) Efficiently Improving and controlling the government fiscal operations, thereby promoting fiscal transparency and fiscal accountability in the management of government finances,

(x) Managing the problems of low level of productivity in agriculture and low capacity utilization in the manufacturing sector,

(xi) Reduction of the heavy debt burden of external debt and domestic debts, minimization income inequality (Appah 2012).

2.1.03 Automatic Stabilizers and Discretionary Fiscal Policy Measures

The fiscal policy, as an economic measure is the government's use of its spending and taxes to in order to achieve macro-economic growth and development. It describes the combinations of measures in the variation of government revenue (tax), government expenditure and deficit financing in order to achieve the overall economic objectives in an economy. The fiscal policy measures are: tax, government spending, relief, concessions, borrowing, fiscal incentive policies etc. (Benos, 2009).

According to Mankiw (2003), the government fiscal policy measures could be either an automatic stabilizers or as a discretionary fiscal policy measure. The Automatic stabilizers are government spending or taxation actions that take place without any deliberate government objective and it tends to dampen the business cycle of an economy. While, in discretionary fiscal policy, governments actions affecting its spending and tax are deliberately targeted at achieving specified macroeconomics goals (Anyafo, 1996).The main difference between the two financial policy measures is the timing of implementation. When the economy starts to go through an economic fluctuation, automatic stabilizers spontaneously respond without any official or government body having to take action. In the implementation of discretionary fiscal policy, there is usually a time lag (Zangler and Durnecker, 2003).Discretionary fiscal policy tends to be more difficult due to the recognition lag and administrative lag.

This is because implementing the modified fiscal policy requires legislative action, which usually take a longer period to implement. Fiscal policy must be properly timed to achieve the desired result at the appropriate time. For instance, an expansionary fiscal policy may be adopted when the country already in recession or recovering from an economic recession. The effects of a government revenue (tax) reduction may tend to be moderate and may require a longer time lag because individuals may not immediately spend their excess disposable income resulting from the reduction in tax, as they may save for investment (Audu, 2012).

In reality, fiscal policy is adopted during to raise aggregate demand during economic recession and alter aggregate demand during economic boom. But if poorly timed, could lead to increased inflation and may accelerate declines in the economy when the economy has already started to slowing down (Boschini,Pettersson, Roine, 2016).

Since, forecasting economic activity is not an exact science, proper timing becomes an issue. There is a time lag between the period fiscal policy changes are needed in an economy, the time lag the fiscal policy need is recognized and the time lag when it is implemented. There may be a reasonable time lag between the time of recognizing the fiscal policy need and the time that needed fiscal policy changes are taken. Lastly, another challenge associated with proper timing of fiscal policy is that the impact of a change in fiscal policy measure may take a longer time before the implemented fiscal policy changes are felt (Chuku, 2015).

On the contrary, automatic stabilizers focus on managing only the aggregate demand of a country and this is a major limitation. Discretionary policies target some specific sectors of the economy. Discretionary policies can be used to address some economy problems that are not tied to aggregate demand. This happens if there is economic recession, because its workers force lacks certain needed skills, so automatic stabilizers cannot be used to address this problem, government programs, like retraining, may be used instead. Some automatic stabilizers such as the tax and social services exist prior to an economic fluctuation. Automatic stabilizers that are not accompanied by specific legislation may alter budget deficits during times of economic recessions or economic booms. According to Anyanwu (1997), they enact counter-cyclical fiscal policy without the lags associated with legislative policy changes.

2.1.04 Meaning Of Government Revenue

Babalola & Aminu (2012) defined government revenue as all monies received by the government that are not from issued debt instruments, liquidation of government investments and private trust transactions in an economy. It also relates to all tax collections, charges, miscellaneous revenue, and utility, sale of alcoholic beverages and insurance trust revenue for all funds and agencies of a government (Anyanwu, 1997). It is seen as all monies received by the government. Government revenue is a vital tool of fiscal policy of the government and is the opposite variable of government spending. Government revenues are usually from sources such as tax on the incomes of individuals, corporate organizations, wealth accumulation of individuals and corporations and tax on the goods and services produced in the country, exports and imports duties, and other non-taxable sources of revenue. Some of these non-tax sources are: income from government-owned corporations, revenue from the central bank. Other non-tax sources are: receipts from external loans and international financial institutions' debts. Governments all over the world earn public revenue from Tax revenue, Non-tax revenue and Capital receipts (Egbulonu & Amadi, 2016).

In this research, government revenue constitutes one of the explanatory variables that explain fiscal policy. And Fiscal Policy is government's use of revenue, expenditure and borrowing to influence the level of economic activities in the country in order to enhance economic growth, generate employment, reduce poverty and enhance the general well-being of the citizens.

2.1.05 Tax in Fiscal Policy

Taxation is a compulsory payment by individuals and organizations to the relevant, inland or internal revenue authorities of the country (Anyafo, 1996). Taxes are sums of money which the government imposes on individuals and corporate bodies in line with the laws of the land. Tax are paid on net profit earned, properties owned, etc. in order to raise revenue for the government so as to provide essential services which can are beneficial to the society (Appah,2010).

Taxation is compulsory and they are paid by individuals and corporate organizations to the appropriate revenue authorities of the country at various levels (Enache, 2009). Taxation is the most common source of revenue to the government to help them finance government activities as well as a fiscal policy instrument used in regulating economic activities. Specifically, tax imposed at the local government level is known as Rates (Wu, Tang & Lin 2010).

The services provided by the government, in return are without charge. But, the payment of the tax does not in itself guarantee taxpayer to receive any government service of which he would not be eligible for. The major differences between taxes and other sources of government revenues is that it is compulsory and it is also an instrument of fiscal policy that is used to regulate the level of economic activities. It is an obligation for the taxpayer to pay his tax on the basis of the pre-determined standard, but not a choice (Enyim, 2013).

Government protects its citizens at home using the police force, and it protects them against external attacks by providing an army, navy and air force. Most governments provide roads, Public transport, hospitals, educational facilities and postal services (Fofack, 2010).

Some of the key reasons for the imposition of taxes include:

- To cover the cost of general administration, internal and external defense, maintain law and order, and the social service provided by the government.
- To reduce the disparities existing in the distribution of income in the country.
- To control the consumption of some harmful and non-essential goods and services.
- To control inflation by reducing the volume of purchasing power.
- To service national debt and to provide retirement benefits etc.
- To provide subsidies in favor of preferred sectors of the economy, for example, agriculture and selected industries.
- To implement government policy,since the budget can to be used with monetary policy, taxation has often been increased in order to provide a large budget surplus, or reduce to stimulate demand. The government is expected to provide relief to areas affected by ecological distress and also contribute financial resources to assist public sector enterprises.

Under conditions of full employment, when governments divert resources from the private sector of the economy to carry on their activities, private sector output is mostly reduced below the attainable levels. This reduction is the real cost of the governmental intervention. From the view point of society, however, it is offset and perhaps more than offset, by the benefits from the governmental services. This private sector burden exists whether taxes are imposed to finance the government expenditures or not. When taxes are used, the tax type will control the pattern of distribution of the burden among the persons in society. This pattern is called the incidence of the tax (Zagler, 2003).

A **tax** originated from the Latin word *taxo*. It is a financial charge or levy that is imposed on individuals and other legal entities known as taxpayers by the state or the the state representatives in order to funds that is used in executing government projects as well as render essential services to the people. A tax evasion (resistance to pay tax) is punishable by law. Taxes may be director indirect and it is expressed in monetary terms. Most economies have a tax system in place and functional institutions responsible for the administration of tax (Appah, 2010).

The essence of tax is to raise revenue for the government. The government use the money collected as to carry out if functions. These functions include expenditures on economic infrastructure such as: roads construction, sanitation and refuse disposal, legal and regulatory systems, defense and security, education, health-care services, scientific research and development, social services, data collection, record keeping and dissemination, insurance policies, and the operation of government itself. A government's ability and capacity to raise taxes is known as fiscal capacity (Odewummi, 2012).

According to Appah (2010),government accumulates debts when government expenditures exceed tax revenue. A percentage of the tax collected is used to service past debts. Responsible governments also use tax revenue to render welfare and public services to the people. Some of these services include: funding education systems, payment of pensions for the elderly, payment of unemployment benefits, provision of functional public transportation. Others include: Energy, water and waste disposal and recycling are common public utilities provided by the government with tax payers' money (Batia, 2006).

Most neoclassical, unless there are other negative externalities with taxable activities, taxation may create distortion that may result in economic inefficiency (Abata, Kehinde, Borarinwa, 2012). Attempts are made to identify the best tax system that would possible reduce or eliminate these distortions. Most Recent research in America have suggested that United States of America government taxes investments on funding higher education more heavily than it subsidizes higher education, as a result contributing to a high level of shortage of the skilled workers thereby, increasing the gap in pre-tax earnings between highly educated and less-educated workers in the country (Eze, & Ogiji, 2013).

Governments use different types of tax thereby vary the tax rates depending on individuals earning power. This is done in order to distribute the tax burden among individuals or classes of tax payers. Such classes include: business sector, or to redistribute income between individuals or classes in the population. Taxes levied on the poor supports nobility, so modern day social-security services are aimed at supporting the poor in the society, the less privileged, the disabled, the retired by levying tax on the work force. Again, taxes collected are used in funding foreign aids and military operations as well as influencing the macroeconomic performance of the economy (Fofack, 2010).

According to Farayibi & Owuru, (2016), the communal values and the values of those in political power are shown in the tax system. To ensure a good system of taxation, a state must ensure that the distribution of the tax burden which indicates who will pay taxes and how much will be paid ax tax and how the taxes spending is regulated. In a functional economy, where those responsible for tax system administration is public elect, their choice represents the type of community that the public wishes to enjoy. But, where the public do not have any influence on the tax system, that system will possibly reflect the values of those in authority (Odewummi, 2012).

As tax revenue is collected, administrative costs are incurred from customers to the various suppliers of these goods or services being sold. But, the resource collected from the public through taxation is not always equal to the amount used by the government and it is not the same as tax. There is usually a deviation which is the compliance cost and these costs include: the cost of labor and the cost of other expenses incurred in the process of applying various tax rules, laws and regulations. If tax is collected for the purpose of funding government expenditures specified purpose like tax on alcoholic drinks spent on rehabilitation in the alcoholism-rehabilitation centres, it is known as hypothecation. This practice is often times hated by government authorities as it limits their freedom of choice and action. Most economists believe that money is fungible, so they see hypothecation to be intellectually dishonest as it differs from reality (Appah, 2010).Also, in most cases, these taxes and excises duties previously levied in order to finance some specific government projects areusually sent to the government general fund. In many cases, such taxes are collected through highway tolls which are usually inefficient.

As commercial disputes are settled by the government, especially where common law applies, it justifies a sales tax usually value added tax (VAT) in most countries. Due to the voluntary nature of these tax, some of the forms of taxes as immoral. Anarcho-Capitalism is the most extreme of the anti-tax view, and it shows that any social services should be bought voluntarily by the person(s) using these anti-tax laws (Lewis, 1955).

Incidence of Taxation: The incidence of a tax falls on the person who pays it. In income tax, it falls on the person that earns the income. If it is an indirect tax, the incidence falls on the buyer or the seller or shared in a proportion between them, depending on the elasticity of demand for the commodity. If the demand for a commodity is perfectly-inelastic the price will rise by the full amount of the tax, so its incidence will be on the buyer. If demand is fairly-inelastic, the burden will fall on the buyer. If, the demand for the commodity is perfectly elastic the seller will reduce his price by the full amount of the tax, so that its incidence will be on the seller. If the demand is fairly elastic the tax will fall largely on the seller than on the buyer (Ogbole,Amadi, & Essi, 2011).

Effective Incidence of Taxation: Economists in recent times go beyond the above meaning of tax incidence to express concern over the effective incidence. In showing effective incidence, it is vital to establish the changes in income distribution as a result of changes in the budgeting policy; by, finding out the extent the real burden of tax is distributed both by the imposition of the tax and by the public expenditure (Jones,Manuelli, & Rossi, 1993).

Impact of Taxation

Tax incidence and the impact of taxation appear to be closely related, but the impact of a tax is meant the initial resting place of the tax. In other words the burden of taxation falls on the tax payer from whom the relevant tax authority collects the tax in the first instance. In excise duty, the tax authority collects the tax from the manufacturer first, so the impact is on him; however, the manufacture shifts or transfers the impact burden to the consumer. On the other hand, if it is an income tax the impact generally is on the one who finally bears the burden (Ogiogio, 1996).

2.1.06 Principles of Taxation

These principles of taxation also known as the canons of taxation emanated from Classical economists, mercantilists and physiocrats. The first four canons of taxation were developed by Adam Smith. But J.S. Mill and others developed the length the subject-matter.

Thus, these principles/canons of taxation have received considerable attention and it is applied in economies development and in the evaluation of appropriate tax structure. These principles are basically an application of concepts developed from welfare economics. So the tax system of any economy should be based on these sound canons, In order to achieve the social justice objective.

According to Anyanwu (1997),the key principles of taxation, the first of which were articulated by Adam Smith are: (i) The canon/principle of Equality, (ii) The canon/principle of Certainty; (iii) The canon/principle of Convenience, (iv) The canon/principle of Economy, (v) The canon/principle of Simplicity, (vi) The canon of Productivity, (vii) The canon/Principleof Flexibility and (viii) The Canon/Principle of Impartiality.

Each of these principles or desirable characteristics of a healthy tax system will be further discussed here-under (Galor, 2005).

(i) **The Canon/Principle of Equality or Equity**; This principle advocates that the amounts payable by each taxpayer should be equal, and should be in the proportion of their income. This is to ensure taxpayers' the ability to pay. It is only if tax is based on the tax payer's ability to pay that one can say that the tax system is just. Sometimes this canon of taxation is interpreted is not regarded today as the most equitable. However, the proportional principle is not regarded today as the most equitable, since the payment of ₦150 by a person with ₦1, 500 income per annum is a heavier burden than the payment of ₦1,500 by a person with an annual income of ₦15,000. To be equitable, the tax burden should be spread among the people according to their financial muscle. In other words, the rich should contribute at a higher rate than the poor. This sounds more progressive (Ginsburg, 2000).

(ii) **The Canon/Principle of Certainty**: The principle of taxation believes that the taxpayers ought to be too certain of the exact tax to pay, the time and method of payment. If "certainty of tax" is doubtful it will lead to insolence and corruption on the part of the tax officials. Certainty of tax purges the public revenue system of arbitrariness. If a tax is such that the taxpayers have to consult the revenue officials for interpretation of its implication then taxpayers are merely at the mercy of Inland Revenue officials. This will lead to all sorts of abuse of office: bribery, corruption and nepotism. On the part of the government, the principle of certainty implies that it would be easier for the government to predict with a high level of certainty the amount of revenue to receive from tax for the purpose of budgeting (Havi & Enu, 2014).

(iii)**The Canon/Principle of Convenience**: It is advocated under the canon of convenience that taxes should be conceived in such a way that the manner and time of payment should be suitable to the tax payers. To ensure that the manner and time of payment of a tax is free from difficulty, it is necessary to relate the ways in which the taxpayers receive and spend their incomes with the collection of the tax. It is from this canon/principle of convenience that the Pay- As -You Earn (PAYE) system of tax collection was developed. In the Pay as you earn (PAYE) system of tax, is a system of paying the tax payable by the income earner is deducted at source from his/her current income. Here, they tax payer accounts directly to the appropriate tax authority. When PAYE was first introduced in England in 1943 the amount of tax depended on earnings during the previous financial year, the amount being deducted in equal installments, but in 1945 deductions were made dependent on earnings during the current financial year. Employers are issued Tax Tables to guide the amount to be deduced (Hassan, et al. 2003).

(iv) **The Canon/Principle of Economy**: This principle of taxation requires the cost of administering the tax should justify the expected revenue (tax) collected from the tax, it means that the cost of collecting the tax should not exceed the revenue from the tax. Two issues arise in this regard. In the first place, if the cost of collection the tax is not too high to outweigh its benefit the tax is considered economical. Again, if the cost of collection takes a large part of the tax revenue collected, the tax is deemed not economical. There is no wisdom in killing a fly with a sledge hammer, thus, if the yield from a tax is ₦25 million and the cost of collection is ₦24 million, then the tax is quite uneconomical. The second issue with regard to the economy of taxation is that a tax should be free from transmitting a counter-productive repercussion on capital formation, employment, savings and production. For this reason, taxes on imported luxury goods are economical because they not only boost government revenue but also discourage expenditure on non-essential and less-productive items which may result in higher social costs. On the other hand, taxes on raw materials, spare parts and baby food would be uneconomical in that such taxes would discourage production as well as increase the cost of production and people's suffering (Karinga, 2001).

(v) **The Canon of Simplicity**: This canon of taxation requires that the tax system should be easy for the tax payer to understand and it must be simple too. The tax administrators should not have a hidden agenda. Ambiguous clauses should be avoided. A properly understood tax system eliminates the chances of corruption and oppression by tax officials (Khosravi & Karimi, 2010).

(vi) **The Canon of Productivity**: Also referred to as the principle of fiscal adequacy, this canon advocates that the proceeds, or yield from a tax should be adequate to cover

(vii) government expenditure. An income tax system which targets only the high income group and the rich minority may not yield enough revenue if altogether all the other income groups are exempted. A productive tax enhances rather than inhibits the productive capacity of the economy, thus, if the entrepreneurs are excessively taxed, this can be counterproductive since such a tax would continue to disincentive to investment. An unproductive tax can engender capital flight from a country. Another point is that a few taxes with high yield are better in terms of productivity than a multiplicity of taxes with low yields.

(viii) **The Canon of Flexibility**: Under the canon of flexibility, it is that the tax system should be flexible and adjustable but not rigid. Such an adjustable tax system would allow any tax found to be obsolete to be scraped and substituted with an innovative and meaningful alternative. Nigeria recently scraped the Sales Tax and substituted with the Value Added Tax.

(ix)**The Canon of Impartiality**: A taxation principle established under the canon of impartiality is that a tax should not discriminate between tax payers under similar circumstances. An impartial tax system ensures that all persons similarly placed pay the same tax. This principle applies to both direct and indirect taxes. For example, all tax payers who have dependent relatives are expected to enjoy the applicable relief to the limit allowed. In the case of indirect taxes, a selective tax on alcoholic liquor falls on all alcohol consumers to the limit of their appetite and resources while non-consumers of alcohol are free (Dada & Faronopo 2020).

2.1.07 Features of Good Tax System

A good tax system for a developing country should satisfy most of the following features:

(i) Allow minimum sanctifies,

(ii) It must make the tax burden tolerable,

(iii)Be for common good and confer maximum social advantages

(iv)Be highly canonical,

(v) Be employment stimulating, and

(vi)Should facilitate economic growth.

We shall elaborate a little further on the above attributes.

(i) **Minimum Sacrifice**: Taxes are levied on incomes and wealth, and their payment involves sacrifice on the part of the tax payers. A good tax system, will always aim at minimizing this sacrifice. This principle is derived from the law of diminishing marginal utility as applied to money. To carry out this principle it would require that the impact of heavier taxation be shifted to incomes that are above a certain level and benefits of tax relief prevail,and to avoid the possible disincentive effect on high income earners (Barro, 1989).

(ii) **Tolerable Tax Burden**: A good tax system ensures that the tax burden on a community does not exceed its taxable capacity. The burden may be reduced by introducing tax reforms that enhance the nature of the tax levied, the time and mode of payment. In Nigeria as well as other developing countries particularly in the sub-Saharan Africa the taxable capacity of those engaged in primary production is very low. Certainly, a heavy tax burden under such a situation would result to a fall in the level of productivity and most likely increase social costs.

(iii) **Common Good and Maximum Social Advantage**: Taxes are general compulsory contributions of wealth levied upon taxable persons used in financing the expenses of the government in conferring common benefits upon the people. The proceeds or entities from which the tax is collected, but utilized benefits on the very persons from a tax are not enhancement of common good. In this respect therefore a good tax system should adhere to this principle of maximum social advantage. In other words, it should ensure maximum benefits to the community as a whole (Fofack, 2010).

(iv) **Highly Canonical**: A good tax system should be highly canonical. So, it should as much as possible show fully the principles of taxation. A good tax system, should be equitable, certain, flexible and productive. A good tax system should be simple to administer to minimize the chances of tax evasion and tax avoidance. A good tax system must avoid multiplicity of taxes that may make the tax administrative machinery inefficient and uneconomical. However, to ensure adequate government revenue, the tax system should be broad based. Taxes should be convenient to the taxpayers' time and mode of payment. A tax system which enables the government to easily predict with sufficient accuracy the tax revenue yield is said to be a good one. Again, a good tax system should be able reduce the gap in income and wealth that exist between the rich and the poor in the society.

(v) **Employment Stimulator**: A good tax system for a developing country should be aimed at creating an enabling environment for raising the level of employment and for raising the standard of living of the citizenry. So, a good tax system should be an employment stimulator. It should not discourage labour and hardwork (Galor, 2005).

(vi) **Economic Growth Facilitator**: In most developing countries like Nigeria, the taxes should be an effective instrument of economic growth. The long-term objective of a good government finance system is economic growth rather than short run economic stability. a good tax system should encourage saving and capital formation and should be suitable for the mobilization of resources for economic growth enhancement (Benos, 2009).

2.2.08 Principles of Revenue Allocation in Nigeria

According to Anyanwu (1997),the major problems of revenue allocation in Nigeria have revolved around inter – state sharing of federal revenues. As stated above the sources of revenue affected have remained virtually unchanged but the proportions of these revenues to be share by and the relative shares of the states have changed from time to time. The various principles for inter-state sharing which have been tried over the years can be summarized as follows;

1. Derivation.
2. Even development.
3. Need.
4. National interest.
5. Independent revenue.
6. Continuity of government services.
7. Minimum responsibility.
8. Financial comparability.
9. Population.
10. Equality of states.
11. National minimum standards.

12. Equality of access to development opportunities.
13. Absorptive capacity.
14. Fiscal efficiency.

Derivation: The principle of derivation asserts on equity grounds that the state from which the bulk of the revenue of the state come from should receive higher allocation than other states. In the 1950's and 1960's when the principle of derivation was applied mainly to the revenue from exports taxes on agricultural produce in Nigeria, the principle encouraged the regional governments to promote the cultivation of export crops: cocoa, cotton, groundnut, oil pal etc. The governments set up farms of their own and extended assistance to the farmers. From this point of view, the application of the principle of derivation promoted efficiently through the direct contribution of the regions to the generation of revenues (Glomm and Ravikumar, 1994).

Even Development: The principle of even development requires that growth and development infrastructures be evenly spread to reduce the equalities or imbalances in the country. The principle of even development, given full expression by the Dina Committee (1968) has been called by various names before and after: even progress: balanced development: equal access to development opportunities etc (Amaja and Morrissey, 2005).

Need: The principle of need is interpreted in terms of functions of one level of government against the functions of another levels, and the corresponding requirement for financial expenditure and obligations. For inter-state allocation of revenue in Nigeria, the principle of need has been used more to raise the level of the deficient states than no push forward the level of the relatively advanced states. It is, thus, an equalizing principle based on equity rather than on efficiently considerations.

National Interest: The principle of national interest is used by the highest level of government (federal) in the transfer of funds to the state and local government levelsto serve various considerations which are economic, political or strategic in the economy.

Independent Revenue: This principle of revenue is pure and simple, an efficiency – inspired principle which asserts that every level of government should keep a certain percentage of the revenue it has raised for its use. The bulk of the revenues of the states usually come from its internally generated revenue and what it gets from the federal government as allocation. The other main sources of revenue to the state governments are: personal income tax, capital gains tax and stamp duties.

Continuity of Government Services and Minimum Responsibility: The principle of continuity of government services is similar in content to the principle of minimum responsibility of government and they are taken together here-under. Both principles suggest that all the levels of government have certain responsibilities and that the level of service they must maintain which the government provides for its citizens must not be allowed to fall below a certain norm. on efficiency grounds these principles apply more appropriately in vertical allocation between tiers of government and on equity considerations, in horizontal allocation among state. Minimum responsibilities of each level of government (federal, state and local government) refer to the prescribed functions in the constitution and, therefore, reflect the principles of need.

Financial Comparability: Introduced by the Binns Commission in 1964, the principle of financial comparability is a procedure to be undertaken in the process of revenue allocation. The principle stresses that any review of a revenue allocation system should compare the financial position of the units participating in an allocation: the level of independent revenue or tax efforts of the units. It mixes efficiency and equity considerations (Anyafo, 1996).

Population: The principle of population hinges on the argument that government is about people and its developmental projects should be people oriented. On the question of the equity merit of the principle, it has been pointed out that the use of un-weighted population data cannot fully capture equity because as a proxy for need, it fails to capture the many dimensions of the population be they age, sex, literacy etc.

Equality of States: The principle of equal shares to states is justified in the context of the principle of minimum responsibilities for each unit in any level of government. In other words, a minimum set of responsibilities is common to each state irrespective of size or capacity or to each local government council within a state.

Minimum National Standards: First introduced by Dina in 1968, this principle asserts the maintenance of minimum national standards in allocation among states. Government may set minimum standards in education, agriculture, health, etc with the aim of lifting each unit in the federation at least up to that minimum and, if possible, beyond it. The standard will be revised upwards, as the federation develops and, by so doing; the use of the principle can lead to efficiency. However, for the purpose of sharing what now exists, or within a given period, it is a principle that, together with need, minimum responsibility and even development, is satisfied principally on equity grounds (Dada & Faronopo 2020).

Equality Developmental Opportunities Access: This came from the Aboyade Committee (1977) with a view to correcting unequal endowment of states. The principle of need, even development and equality of access are variants of the same principle and can be appropriately satisfied by the same measures. The Aboyade Committee used, as an index, the ratio of the state's planned expenditures on the economic development sectors to those of the states combined. But as this index rests on a purely putative set of data, it is easily manipulatable and not readily verifiable hence it is unreliable as a measure of access to development.

Absorption Capacity: The principle of absorptive capacity that the state must have capacity to properly utilize their funds. It advocates that funds should, on grounds of efficiency, better go to those states that are able to utilize their funds for developmental purposes.

One of the purposes of fiscal transfer is to create and expand capacity. If, therefore, those that are considered incapable of using additional funds are starved of funds on that account, the ruthless application of the principle will lead to very lopsided development.

However, it is the application of funds, in the capital expenditure programme, that the principle may be seen to apply. Since development funds are often obtained a some cost to the user the principle can be interpreted to mean that states must show their capacity to service the cost of the funds they obtain for their capital programmes, that is, they can carry the debt burden (Landau, 1983).

Tax Effort: The principle of tax effort is designed to encourage states to make maximum use of their tax capabilities. It is, in essence, part of the principle of independent revenues. If the system of taxation is sufficiently progressive, this principle will aid efficiency while being equity neutral (Khosravi, & Karimi, 2010).

Fiscal Efficiency: Stated simply, this principle believes that government should minimize the cost administration of government so as to obtain the highest revenues at a reduced cost. It satisfies the efficiency objective and is linked to the principle of tax effort and independent revenues under one umbrella. Fiscal efficiency reflects on both the ability to raise taxes and the ability to collect them. It also reflects the structure of the tax base and the overall administrative instruments of government. It is more expensive to collect small amounts from one million tax payers than to collect the same total from one thousand payers. Accordingly, differences in the structure of the tax base itself will show up in the cost of fiscal administration (Jones, Manuelli, & Rossi, 1993).

Therefore, this current study shall classify government revenue as Oil Revenue and Tax Revenue used as fiscal policy revenue component to achieve the specific objectives of this study. This is necessary as it would assist the researcher to determine how Oil Revenue and Tax Revenue have affected economic growth, reduced unemployment and poverty and how they have enhanced Human Development in Sub Saharan Africa (Dada & Faronopo 2020).

2.1.09 Expenditure as a Tool in Fiscal Policy and Economic Growth

Government expenditure is an actual payment or the creation of an obligation to make a future payment for some benefits or services received (Anyafo, 1996). Government expenditures include payment for final goods and services purchased by the government or GDP as well as transfer payments. Government use spending to undertake its key functions: national defense and education. This spending is financed with both of tax revenue, other revenues and government borrowing.

Government expenditure is spending by the government on collective needs and wants of the people such as: payment for pension, provision of infrastructures, etc. Before the end of the19th century, it was believed that money that is left in private hands could yield more results that than the ones left in the hands of the government. In the 20th century, Keynes believes that government expenditure is aimed at ascertaining the levels of income ensuring income distribution of any country's economy. Ever Since that period, government expenditures has continued to increase (Glomm and Ravikumar, 1994).

In the 17th and the 18th century Public spending was regarded as wastage of resources. Some believed that government should concentrate on spending for defense and maintaining law and order in the society (Omodera 2019).

Government spending is the total in cash terms of Federal, State and Local Government expenditure and financing transfers to the parastatals at the three levels of Government, showing that it may take form of: wages to employees/civil servants, payment for social security services, benefits received and infrastructures. As government spending transfers assets to the public sector. Since governments reversed assets flow is represented by Government expenditure and tax and are seen as opposite poles.

Government expenditure has two major components: Recurrent expenditure and Capital expenditure.

Recurrent expenditures are government spending made regularly or reputedly from year to year, example: personnel cost and overhead cost.

Capital expenditure on the other hand are expenditure on new construction and extensions of an alterations to existing building and the acquisition of fixed assets having an expected working life of more than one year (Anyafo, 1996).

According to Anyafo (1996), the main elements of government expenditure are:

(a) Expenditure on the government house administration at the levels of government (federal, state and local government)

(b) Expenditure on of the armed forces, and the maintenance of the internal security of the country.

(c) Expenditure on the legislature at levels of government.

(d) Expenditure on maintenance of diplomatic agencies overseas,

(e) Expenditure incurred in the servicing of domestic and foreign debts,

(f) Expenditure on economic, social and health services and

(g) Expenditure on development of domestic political institutions. For proper economic understanding of the probable impact of government action on the development process, Anyafo (1996) classified various public expenditures in some meaningful way. Since there are varieties of classification system, the most suitable for an analyst depend on his objectives and what he wishes to do with the data. Classification cannot be hard and fast, even within a given set of objective, as often argued how a particular item is to be classified. Example, is agricultural training to be classified as the economic (being agriculture) or the social (being education) sector? Should it be classified as recurrent consumption (being a service)? Overhead capital (being a human resource development investment)?

Anyafo 1996 classified Public expenditure in five different ways:

(i) By levels of government (i.e. LOG classification),

(ii) By ministries, Extra-ministerial departments and parastatals (i.e. MEP classification),

(iii) By economic life span (i.e ELS classification),

(iv) By object of expenditure (i.e. OBEX classification), and

(v) By sectoral economic function (i.e. SEF classification).

1. **Level of Government Classification (LOG)**: Under this LOG classification, public spending is related to the level of government. Accordingly, in a federal system we have (a) federal government expenditure; (b) state or provincial government expenditure, and (c) local government/authorities expenditure; in a unitary system, on the other hand, we have (a) central government expenditure and (b) local authorities or local government expenditure (Karinga, 2001)..
2. **Ministries, Extra-ministerial Department and Parastatasl Classification (MEP)**: Under the MEP classification, public expenditure is related to the relevant spending agencies of government namely: the ministries, the extra ministerial departments and the parastatasl (Knack, & Keefer, 1995).
3. **By Economic Life Span (i**.e. **ELS Classification**): Under the ELS classification, public expenditure is polarized into recurrent expenditure and capital expenditure in recognition of the timing frequency of the disbursement decision. A recurrent expense is made frequently or regularly. In the context of government financial management, recurrent expenditure has an economic life span of less than one year hence in governmental budgeting, it is repeated annually.

4. **Objective of Expenditure Classification**: The items of public expenditure are disclosed, under the OBEX classification, in accordance with the purpose or object of the disbursement. Accordingly, the items of recurrent expenditure are:

Personal Costs

- Salaries and wages
- Allowances
- Leave grant

Overhead Cost: These costs include: expenses on Travel and transport, payment for Utility services, expenditure on Telephone services, payment for Stationery, payments for the Maintenance of office furniture and equipment**, payments for** Consultancy services, payments for staff development and training etc.

In terms of object of expenditure, emphasis was placed on projects related to:

(a) Agriculture and natural resources.

(b) Water resources

(c) DFRRI and rural development.

(d) Defense and security.

(e) Mines, power and steel.

(f) Education.

(g) Health.

(h) Mass transit programme.

(i) Federal capital territory.

(5) **Sectoral Economic Function Classification**: With a view to enhancing international comparison, the SEF classification distinguishes transfers from functional sector outlays. Scholarship, aids are desegregated into public debt interest charges, capital repayment, external financial obligations, pensions and gratuities and others. Functional sector outlays are also desegregated into: administrative sector – reflecting expenditures on defense, internal security and general administration (Landau, 1983).

Economic services sector – reflecting expenditures on agriculture and natural resources, construction, manufacturing/mining/quarrying, transport and communication, special projects and other(Omodera 2019).

2.1.10 Causes Of Growth in Public Expenditure

Over the years, several factors have been responsible for the continues growth of public spending. These factors include:

1) due to modernization, defense Expenditure for the purchase of military hardware by navy, army and air forceas well all preparation for war by any country has accounted for continuous increase in government spending.

2) Population growth: As population increases government spending increase too, as there would be need for more spending to maintain law and order, increase access to education and provide infrastructure (Karinga, 2001).

3) Welfare activities: This includes the following services: The Provision of public services and utility payments, enhanced economic growth and development, Increase in public revenue and International Obligation like cultural exchange.

4) Wars and other social crises:various tribal crisis, religions and communities clashes,prolonged economicdown turn, increased unemployment rate and other natural disasters like: earthquake, hurricanes or tornadoes could account for governments continuous increase in expenditure..

5) Funding super national organizations: The funding of International organizations like: The United Nations, NATO, European Union and other multinational organizations are responsible of individual member countries. This is for the provision of public goods and services at the international level. This also is responsible for increase in public spending (Krugman, 2003).

6) Provision of Foreign Aid:Richer countries have responsibility of assisting the poor and under developed countries. This channels spending to these foreign countries and it is responsible for governments increase spending.

7) Inflation: the rise in price level of goods and services leads to increase in the cost of all activities of the government thereby responsible for government increased public spending (Landau, 1986).

Gerson (1998) explained that the following as the purpose of government expenditure:

1. To supply of essential services that can’t be handled by the private sector. These are called public goods and they include: defense, road and bridges, hospital, schools, welfare payment and unemployment benefits and disability benefits.

2. To achieve supply side improvement in the macro economy, such as spending on education and training to improve labor output.
3. To minimize the negative effect of externalities such as population control.
4. To subsidize industries that needs financial support and which is not available from the private sector.
5. To increase extra-spending on the macro-economic indicators, so as to help achieve increases in aggregate demand and economic activity.

2.1.11 Impact of Government Expenditure on Economic Growth in Nigeria

The classical school of thought, led by Adam Smith does not believe in government Intervention on the affairs of the economy, saying that there should be Laissez-faire and that the private individuals would carry out the economic activities better for the total growth of the economy while some other economic authorities believe that government spending significantly have effects on the economy of any nation(Egbulonu & Amadi, 2016).

In Nigeria, the rate of economic growth and development are dependent on how the government manages the affairs of the economy. The impact of government spending depends on the way in which government can enhance growth and they include the provision of public goods, infrastructures, social service and targeted intervention (Odewummi, 2012).

The provision of social and physical infrastructure directly improve productivity in the private sector through efficient allocation of resource due to the characteristics of social goods (spill over, externalities, non-excludability) that will be provided or where they are produced the output will be inadequate and outrageously expensive if left in the hand of private individual (O'Nwachukwu, 2017).

Audu (2012), determining the components of government spending that enhances growth made use of disaggregated method. He concluded that the components of expenditure do not have significant positive effect on economic growth in Nigeria for the period he reviewed.

Barro (1990) in his study explained that Investments Spending and productive contributes have significant on the economic growth, but, expenditure on consumption has negative effect on economic growth.

Babalola and Aminu (2012) stated that in Nigeria, as a result of increasing revenue from crude oil and increase in the demand for basic infrastructural amenities, government spending continued to increase. So, the provision of both internal and external security for the people and nation has become a need that must be met.

Ram (1986) reported that government expenditure on defense have significant positive effect on the size and quality of government which translates to economic growth in the country.

FuD and Yucel (2003), in their study on how increased government expenditure and adjustments in tax of developed economies affect economic growth, using different economic approaches reported that more meaningful results are generated. There result revealed that increasing government spending has not significantly influenced growth and development as Nigeria is still very poor and underdeveloped.

This study adopts the Economic Life Span (i.e. ELS Classification) of government expenditure that classifies expenditure based on economic life span as: Capital Expenditure and Recurrent Expenditure. This helps in achieving the objectives of how Capital and Recurrent Expenditures have affected The Gross Domestic Product, Human Development Index, Unemployment and Poverty Reduction and in both Ghana and Nigeria.

2.1.12 The Concept of Deficit Financing

Deficit financing means an excess of expenditure over revenue. The gap is covered by domestic borrowing usually through the sale of bonds and by creating new money (Ogbole, et al. 2011). In developing countries, deficit financing is interpreted in a restricted sense.

Deficit financing means the addition direct to gross public spending through budget deficits, whether the deficits are on capital account on the revenue (Omoniyi 2018).Deficit spending is the volume at which government expenditure exceeds government revenue during a particular period. It is the opposite of budget surplus also known as deficit financing or budget deficit and. This applies to the government, the private sector, or individual (Appah, 2010).

The importance of such policy lies in government spending exceeds its expected revenue. The government may make up this deficit either by depleting its reserve or by borrowing from the private sector. There are some situations when deficit financing may become absolutely essential. So, there are many purposes of deficit financing, which includes:

(i) To finance the cost of war during the Second World War, much deficit financing was made. As war expenditure, it was seen as an unproductive expenditure during 1939-45. So, Keynesian economists do not enjoy using deficit financing to meet defense expenditures during war period. It can be used for developmental purposes.

(ii) Developing countries aim at achieving enhanced economic growth. A higher economic growth needs finances. But private sector is shy of incurring high expenditure.

(iii) Therefore, the responsibility of gathering financial resources to finance economic development rests solely on the government. Taxes are one of such instruments of raising resources in a country (Palley, 1996).

(iv) As poor countries, they fail to mobilize large resources through taxes. Thus, taxation has a small coverage due to mass poverty. A very little or nothing is saved by people because of poverty. In order to collect financial resources, government depends on profits of public sector enterprises. While these enterprises yield almost negative profit. There is also a limit to public borrowing.

Government deficit spending raised economic controversies, as notable economists having different views.

The some economics believe that deficit spending as it has counter-cyclical effect on the economy, but it shouldn't lead to structural economic permanent deficit. So, it is a good economic policy during economic recessions in order to compensate for the shortfall in aggregate demand, but the government have surpluses in period of boom to avoid net deficit over an economic cycle (Oyinlola & Akinnibosun 2013). This is usually argued from both sides: Advocates of federal level fiscal conservatism believes that deficit spending is always a bad policy, while some post-Keynesian economists (neo-chartalists or proponents of Modern Monetary Theory) argue that deficit spending is necessary for the issuance of new currency notes, and not only to stimulate fiscal policy.

According to most economists, during recessions, the government can stimulate the economy by running a deficit internationally.

The deficit spending described by John Meynard Keynes for overcoming crises is the monetary side of his economy theory. As investment equates to real saving, money assets that build up equates to debt capacity. So, the excess saving of money during crisis should equate to increased levels of borrowing, as this generally doesn't happen, the result is intensification of the crisis, as revenues from which money may be saved decline while a higher level of debt is required to compensate for the collapsing revenues. The state's deficit helps a correspondent accumulation of money assets for the private sector and prevents the breakdown of the economy, preventing private money savings to be run down by private debt (Olson, 1982). The monetary mechanism explains how revenue surpluses enforce corresponding expense surpluses, and how these in turn result to economic breakdown was explained by Wolfgang Stützel later by the means of Balances Mechanics (Omodera 2019).

Deficits are considered to represent sinful spending at the expense of future generations who are left with a smaller endowment of invested capital.

This fallacy seems to emanate from a false analogy to borrowing by individuals. Current reality is the exact opposite. Deficits financing adds to the net disposable income of individuals, to the level that government disbursements that constitute income to recipients exceed that removed from disposable income in taxes, fees and other charges (Olson, 1982). This additional purchasing power, when spent provides huge markets for private production, making producers to invest in additional plant capacity, which form part of the real heritage left to the future. This is in addition to whatever public investment that takes place in infrastructure, education, research, and others. Larger deficits, enough to recycle savings out of a growing gross domestic product (GDP) in excess of what can be recycled by profit-seeking private investment, are not an economic crime but a necessity (Okafor, 2012). Deficits in excess of a gap growing as a result of the maximum feasible growth in real output may cause problems, but we can’t get to that level.

It is clear that government borrows to finance excess of expenditure over revenue in order to achieve macro-economic objectives of enhanced economic growth, poverty reduction, enhanced human development and generate employment (Dada & Faronopo 2020).

2.1.13 Concept of Economic Growth

Anyanwu and Oaikhenan (1995) defines economic growth as continuous increase overtime of the capacity of an economy to produce goods and services needed for the enhancement of the general well-being of the citizen in increasing numbers and diversity.

It is an increase in a nation’s level of national output as a result of increase in the quality of resources and improvement in technology. It is also an increase in the value and volume of goods and services which every sector of an economy produces. Growth can be said to be useful if there is an improvement in the well-being of the populace overtime, but, can only be possible if the rate of population growth lags behind that economic growth. Economic growth can only translate into economic development if the proceeds/gains of growth are equitably distributed (Ogiogio 1996).

Nigeria has experienced sluggish economic growth since the end of 2015 with the rate dropping to an estimated 3.0% in December 2015, leading the authorities to adopt an expansionary 2016 budget that aims to stimulate the economy (CBN, 2016).

The understanding of the concept of economic growth in this research would help the researcher achieve the specific objective of determining how fiscal policy affects on economic development in Sub Saharan Africa.

2.1.14 Concept of Economic Development

Economic development is the concept of improving the socio-economic, political, and the general well-being of the citizens. Economic development occurs with the reduction of poverty, inequality and unemployment within an economy (Ogiogio, 1996). Whereas economic development is an endeavor of policy intervention aimed at improving the economic and the general well-being of of its citizens, but, economic growth is a market productivity phenomenon and increases in the Gross Domestic Product (GDP) of a country.

Audu (2012) defined economic development as a continued increase in living standard of the people, associated with improved self-esteem needs as well as freedom from political and economic oppression as well as a greater choice. Economic development is a process of prolonged and sustained increases in the real national income of a country accompanied by positive changes in the economic, technological, political and social structures of a country resulting to over time increased real income per capita of the people, with the stipulation that the number of people below the poverty line decreases, the distribution of income remains equal and development does not become less sustainable environmentally.

Economic development is seen as a factor of economic growth. It was believed that economic development occurred when there was high level of industrialization and economic growth (Ogiogio, 1996). Social factor such as poverty and unemployment were of lesser importance.

The Nigerian economy has been severely affected by external shocks, in particular a fall in the global price of crude oil. Growth slowed sharply from 6.2% in 2014 to an estimated 3.0% in 2015 (CBN, 2016). The sluggish growth is mainly as a result of a slowdown in economic activity which has been adversely impacted by the shortage of supply of foreign exchange and aggravated by the foreign exchange restrictions targeted at a list of 41 imports, some of which are manufacturing and agro-industry inputs. This has led to a cut in production and shedding of labor in some sectors. As a result, with the increasing policy concern over the fall in growth, the central bank has moved to reduce the government's borrowing cost and the cost of borrowing for the private sector to stimulate the economy (Agu, 2014).

For the purpose of this research, economic development shall encompass economic growth (Real Gross Domestic product), Human Development Index, Poverty Reduction and Unemployment Reduction.

2.1.15 Unemployment and Its Economic Implication

Unemployment is generally believed to be a macro economic problem. It arises as a result of insufficient and non-availability of jobs proportionate to the growth population or economy of a country.

Unemployment has been seen as a worldwide economic challenge and has been categorized as one of the serious hindrances to social progress. Apart from a huge waste of a country's man power resource, it generates welfare loss of lower output thereby leading to lower income and well-being of the people (Petrakos, et al, 2007).

Medee and Nembee (2011) stated that unemployment brings about economic waste and cause human suffering. Solow (1956) believed that unemployment is as a result of the inability of a nation to develop and utilize the nation's manpower resources effectively in the rural sector.

Barro (2000) defined unemployment as the difference between the amount of labor at current wage rate and working conditions and the amount of labor not hired at these levels in a country.

Therefore, unemployment causes migration of labor forces in Nigeria from rural to urban and to other developed countries in search for jobs. This leads to drain in Nigeria and to the destruction of the productive labor potential of the migrants for majority Nigerian who travel aboard in search of jobs engage in some negative activities like drug peddling.

Unemployment and economic growth are inversely related, it was also discovered that growth response to unemployment rate varied among sectors of the economy. Like employers in industrial sector use less labor to accept high volume of production which increases the unemployment level (Aghion, 2009)

According to Musgrave (1969), there are two strategic economic policies that can reduce unemployment in a country. The first policy is a demand side fiscal policy that reduces demand deficient unemployment caused by recession and the Supply side fiscal policies that is used in reducing unemployment caused by structural changes.

2.1.16 Unemployment Reduction Policies

1. Fiscal Policy

By increasing aggregate demand and economic growth rate, fiscal policy can reduce unemployment. The government would adopt expansionary fiscal policy by increasing government spending and reducing taxes. As tax is reduced disposable income increases, leading to increase in consumption and savings, as a result, aggregate demand and private investment increases (Mitchell, 2005).

The increase in aggregate demand (AD), results in increased Real Gross Domestic Product, as long as there is growth capacity in the economy. As private investors production increases there will be need for increased workforce, leading to a reduction in demand deficient unemployment. Again, fewer private investors would be bankrupt with increased aggregate demand and stronger economic growth, less job will be lost in the country.

According to the Keynesian theory expansionary fiscal policy is best adopted during prolonged recession. They argue there are idle capital and idle labor resources during economic recession. Therefore, government intervention is necessary to create this additional demand that will reduce unemployment (Musgrave, 1966).

2. Monetary Policy

Monetary policy is another policy for reducing unemployment which involves the cutting interest rates. Cost of borrowing reduces as interest rates are lowered with results to increased spending and investment (Musgrave, 1966). As saving and investment increases, Aggregate Demand increases leading to enhanced Gross Domestic Product and as well reduction in the demand deficient unemployment. Also, exchange rates reduce exports more competitive as a result of lowered interest rates.But in some cases, lower interest rates may not efficiently boost Aggregate Demand (AD). So, the monetary authorities would adopt Quantitative easing which is an attempt to increase aggregate demand and boost the money supply in the economy. This is a similar problem with fiscal policy as it also relies on other components of aggregate demand. If banks are not willing to lend, Lowered interest rates may not lead to increased spending, (Mitchell, 2005).

In economic recession, Demand side policies may reduce demand deficient unemployment. So, it is difficult to reduce the supply side unemployment. Therefore, the type of unemployment that occurred will determine their effectiveness.

Supply Side Policies for Reducing Unemployment

The supply side policy deals more with the micro economic problems. It is aimed at boosting aggregate demand, while seeking decrease unemployment caused by supply side factors by overcoming the imperfections in the labor market. This Supply side unemployment could be classical, Frictional, or Structural.

Policies to Reduce Supply Side Unemployment

1. Education and training: This aims at giving new skills to long-term unemployed which will assist them in finding new jobs in other industries. The unemployed may be unwilling and eager to learn new skills despite having education and training. This may take longer period to reduce the level of unemployment.

2. Reduce the power of trades unions. Real wage unemployment when unions bargain for wages above the market level. To solve this real wage unemployment problem, the influence of trades unions should be reduced as this would also reduce Minimum wages (Mitchell, 2005).

3. Employment subsidies. Firms could be rewarded with subsidy and/or tax break for employing those who are unemployed for a long time. This gives them confidence and the needed on the job training (Mitchell, 2005). This may be expensive, but it may encourage firms to just replace the long term unemployment with current workers to enjoy the tax breaks.

4. Improve labor market flexibility. It is believed that restrictive labor markets are responsible for the higher structural rates of unemployment in Europe which do not encourage firms to employ more workers. Abolishing maximum working weeks and making it easier to hire and fire workers which encourages more job creation is a good example (Mitchell, 2005). However, rise in temporary employment may be caused by increased labor market flexibility which may lead to insecurity for higher job insecurity.

5. Stricter benefit requirements: Governments can make unemployed accept a job or risk losing unemployment benefits by taking a more proactive measure. The government could guarantee a public sector job after a given period. This significantly reduces unemployment in a country. This means that government will end up employing thousands of people in tasks which are expensive and unproductive.

6. Improved geographical mobility: In most cases, the unemployed are more certain regions. The government may give tax breaks to firms in depressed areas of the country in order to reduce this geographical unemployment. Also, they can provide financial assistance to those workers who migrate to high employment areas (Mitchell, 2005).

2.1.17 Inflation and Its Impact on The Economy

According to Audu (2012), the concept of inflation can be defined as the persistence increase in the price level of a wide range of goods and services in a economy over a long period of time. The means that inflation has been intrinsically linked to money, as captured by the often maxim:"Inflation is too much money chasing too few goods in an economy". Apart from distorting prices, it affects saving, discourages investment, leads to capital flight, distorts growth and makes economic planning very difficult and lead to political unrest (Mauro, 1995).

Inflation could have positive effects as well as negative effects on the economic performance of a country. Positively, it can lead to a high sustained growth due to its impact on capital accumulation. Negatively, it impacts on productivity in an economy; inflation has adverse effects on economic growth.

Inflation can lead to uncertainty about the future profitability of an investment project. Klasen (2014) believes that inflation may also reduce a country's international competitiveness, as well as impacting negatively on the balance of payment.

In Nigeria, inflation is the major problem facing the economy. Inflation undermines the role of money as a store of value. It frustrates investments growth and development of a nation's economy. The negative relationship between inflation and growth has been adduced to the strong negative association between inflation, capital accumulation and productivity growth (Mankiw, 2003). Consequently, high inflation is harmful to both investment and real output.

Discretionary fiscal policy is the form of budget deficits and surpluses aimed at boosting or restraining aggregate demand which always involves a monetary element; it is that element that determines the overall impact on inflation.

The monetary element arises because all budget deficits need to be financed through a combination of bond sales and money creation (Mauro, 1995). If the economy is initially at full employment level and the government increases spending, which leads to budget deficit, it will increase aggregate demand in relation to aggregate supply, and mount upward pressure on wages and prices. If it chooses to finance the deficit wholly with bond sales, that will push up real interest rates up and cut into private investment, reducing the initial increase in aggregate demand (Mauro, 1995).

The economy will go back to the initial level of wages and prices, but gradually. At that moment, the higher wages caused by the initial expansion will lead to increased unemployment, which will only be reduced once the real wages return to their initial level (Magazzino, 2010).

In contrast, if the budget deficit is funded through an expansion of the money supply or with sale of bond offset through open market purchases of bonds by the central bank, real interest rates will remain stable or decline. In that situation, the economy will have a new equilibrium at a higher price level. If deficits continue to be financed using expansionary monetary policy, prices with continue to rise.

2.1.18 Foreign Direct Investment (FDI)

Agell, (1996) opined that economists favor the free flow of capital across national borders and is a factor that makes multinational companies seek investment in foreign countries with reasonable risk the desire is as a result of the desire to seek the highest return for capital. He went further to say that due to factors such as bad governance, unstable macroeconomic policies among others and suggested that investment was a way out of Nigeria's economic state of underdevelopment Nigeria is believed to be a high-risk market for investors.

Since 1999 when Nigeria adopted democracy, the government has taken necessary steps to attract foreign investors into the country. They have repealed some of laws that hinder the growth of foreign investment, promulgated laws of investment, image laundering through oversea trips by the president, etc. (CBN, 2016). Abass further said that the underdeveloped nature of the Nigeria's economy gave rise to the need for foreign direct investment.. Generally, two major principle policies and strategies of the Nigerian government towards foreign investment are of the desire for economic independence and the demand for economic development. He stated that investment capital, technical skills, enterprise and natural resources are the four basic requirements for economic development without them, economic and social development of the country would not be enhanced.

This is because savings is affected by the low income of the greater percentage of the population, enough to stimulate domestic investment capital and to finance modern methods and techniques. External sources of money (foreign investment and technical expertise) could be a solution this challenge (Abata, et al, 2012). Gerson (1998) maintained that the engine of growth is FDI as it provides the required investment capital, increased competitiveness of the domestic industries and aids local firms adopt more technologies that are efficient as well as investing in human capital development thereby making them to be more productive. Foreign direct investment (FDI) has significant effect on economic growth as it is more stable than other types of capital investment flows (Ayres, 1962).

Hall and Jones (1999) further opined that there are three main ways through which Foreign Direct Investmentcan bring about economic growth: domestic savings released from the binding constraint. Here, it is argued that capital accumulation is from domestic savings. Also, FDI is the way through which technology spillovers results in increase in factors of production and efficiency in the utilization of resources, which results to economic growth and development. Lastly, FDI increases exports due to increase in capacity and competitiveness in the domestic economy. This depends on the degree of openness and absorptive type of trade regimes of the country (Romer, 1996).

Mendoza,Milesi-Ferretti & Asea, (1997) opined that FDI enhances economic growth, while sustained economic growth brings in foreign investors into Nigeria. They concluded that FDI and economic growth granger causes each other in Nigeria. Meanwhile, Nwaeze,Njoku &Nwaeze, (2014) have point out that in Nigeria, FDI have been essentially in the oil sector of economy and recently in the telecom sector through the liberalization policy of government that led to the licensing of firms in the global system mobile telecommunications (GSM) operators in Nigeria. The volume of FDI according to the World Bank (2010) in 2006, 2007 and 2008 respectively was $8b, $5b and $3.64 respectively. They classified the impact of FDI in underdeveloped countries as being positive as follows:

i. FDI generates production spillover for multinational companies which possess superior production technology and management techniques, some of which are acquired by local firms in a particular economy (Obi 2007). He was said to have argued that the source of spillover is the forward linkage between multinationals and host economy. The multinationals provide inputs at lower cost to local downstream suppliers. He cited Brazil, Thailand and Nigeria as nationals of these countries have their capacity built in various sectors and now hold technical and managerial positions in multinational enterprises.

(ii) Host economy receives rents from multinational enterprises. It is argued that by attracting multinational firms, the host economy captures a portion of the rents that these firms generate. Multinational enterprises pay corporate tax and other taxes imposed on them by the host government, which generate huge sums of money in US dollars that have enabled the governments of host economies in their developmental strides.

(iii) Increases an economy's access to specialized intermediate inputs which are produced in more developed economies and accessible abroad through multinationals. This raises the economy's total factor productivity. It is therefore, argued that this gives less developed economies access to the stock of knowledge capital in more developed economies.

(iv) Improve the living standard of the host economy. It has been said that through FDI multinationals, pay their workers higher wages, hence the standard of living is improved.

(v) FDI can bring in ideas, innovations, expertise and other forms of technology thereby enhancing the level of competitiveness of the domestic market.

(vi) Through foreign investment, the liberalization of the telecom sector in Nigeria has brought a tremendous growth and development. Giavazzi, Jappelli and Pagano, (2000) posited that FDI led to the break-up of the monopoly of Nigeria Telecommunication Limited (NITEL) and the emergency of global system of Mobile Telecommunication (GSM) operations in Nigeria. They maintained that, today, Nigerians could afford to access telecommunication services in both rural and urban areas as a result of investment by Mobile Telecommunication Network, Econet Wireless Ltd, Zain and Etisalat and that the impact has been that of economic growth and development. However they listed some drawbacks of FDI to include:

(i) FDI has led to the development of export sector which is highly import-dependent. This dependence on import for raw materials has limited the impact of massive devaluation in these economies on exports. Tanzi, Zee, (1996) predicted that poor linkage reduces the scope of technology transfer through FDI which could assist in local upgrading. Arguably, he said, the failure to upgrade production in light of greater competition in labour intensive activities from China and Vietnam is one of the underlying structural problems.

(ii) There is also the problem of technological transfer. Transfer of technology is one of the rationales behind FDI. The most enduring potential benefit to developing countries from FDI is the transfer of technology (Stefan 2006). Transfer of Technology promotes sustainable development by enhancing indigenous capabilities. Proprietary technologies and other intangible assets are the backbone of most firms and they are understandably reluctant to share with others who might one day become rivals (Stefan 2006). It is therefore, saddened to note that indigenous capabilities are not developed to the extent that it will promote technological revolution in Asia, Latin America and Africa (Petrakaos, Arvanitidis, & Pavleas, 2007). It has been said that what is transferred is technological capabilities like fabrication and welding and also training high level staff and local suppliers. The parent firms only transfer technology to wholly owned subsidiaries in developing countries one-third faster on average, than to joint-ventures in licenses. They cited Nigeria as a case study in the oil industry where joint-ventures agreement has been entered with the NNPC and foreign oil companies. No tangible level of transfer of technology has been seen to be done as the foreign oil companies are the ones in the exploration and excavation of petroleum products. They further said that the activities of oil exploration have underdeveloped the Niger Delta Area of Nigeria as a result of the environmental degradation. Peugeot Automobile Nigeria (PAN) has operated in Nigeria for a long time yet, there is no evidence or sign that any brand of vehicle has been designed and produced by Nigeria. What is obtainable is just assembling plants.

(iii) FDI also weakens the domestic or infant industries. It is argued that foreign firms tend to over flood the host countries through dumping and stifling domestic production of similar products or items. The importation of cheap cloth fabrics has also destroyed the garment textile industries in Nigeria; Multinational enterprises engage in predatory practices, lobbing to reduce domestic competition, allowing them to capture monopoly or oligopoly rents (Swan, 1956).

2.1.19 Assessment of FDI Contribution to Growth

Sims (1980) said curiously that the empirical evidence of the benefits of FDI both at the national level the level of the firm in the industry is ambiguous. Solow, (1956) noted that foreign direct investment may allow other countries to bring in knowledge and technologies that are lacking in the domestic market, thereby enhancing economic growth and development. Foreign direct investment may also bring foreign skills and technologies that the local country does not have, and foreign investors may have access to other markets in other countries of the globe. De Gregorio found that a unit change in aggregate investment increases economic growth of Latin American countries by 0.1% to 0.2% annually. Babalola and Aminu (2012) further opined that through productivity and efficiency gains, foreign direct investment increases economic growth. He however said that available evidence for developed economies seems to be in line with the productivity of domestic firms and it is positively related to the presence of foreign investors in the country (Boschini, Pettersson, & Roine, 2016). According to Benos (2009), the role of external economic assistance (EEA) in economic development remains controversial. He said that some studies have empirically shown the positive impact of EEA on economic development, while others have highlighted its negative impact on growth on the basis of empirical evidence from developing countries (Boschini,Pettersson, & Roine, 2016) conclude that foreign capital has a positive effect on economic growth.

The role of FDI is widely recognized as a factor which promotes growth in developing countries, and the relationship has given rise to a vast empirical literature focused both on developed and developing countries, (Fofack, 2010). Fölster, & Herekson, (1997) analyzed the link between FDl and growth into four major channels as:

(i) The determinants of growth;

(ii) The determinants of FDl

(iii) The role of multinationals firms in host countries; and

(iv) The direction of causality between the two variables. Endogenous growth models suggest three principal channels through which FDl affects growth. First, FDl increases capital accumulation in recipient countries by introducing new inputs and new technologies. Ginsburg, (2000) FDl increases the levels of knowledge and skills in host countries by training workers and managers on the job Third, FDl boosts competition among the industries of host countries by overcoming barriers to entry and by reducing the market power of existing firms. Che and Gupta (2006) posits that FDl is an important source of capital, because it complements private domestic investment and is often associated with job opportunities and the increase in technology transfer and external effects.

They further said that FDl improves human capital (Knowledge and skills) and stimulates overall economic growth in host countries. However, other studies carried out at the level of firms such as that by Levine (2016) do not support the view that FDl boosts growth. Poot, (2000), concluded on the relationship between foreign capital inflows and growth by observing that, capital inflows have been shown to stimulate economic growth by acting as a complement to domestic savings in developing countries, thus providing them with additional financing to acquire the factors of production, infrastructures, technology and the know-how needed to accelerate their economic development. He, however, emphasized that for foreign capital inflows to have a positive impact on growth in developing countries, these countries must design and implement sound development policies, and provide incentive packages that are acceptable and attractive to foreign investors. In the presence of very poor policies, on the other hand, foreign capital inflows have no positive effect on growth.

2.1.20 Employment Rate as A Measure Of Economic Development

According to Oyinlola, & Akinnibosun, (2013) employment is an economic drift through which human resources are put into productive use. Thus in the Keynesian economic analysis, employment is envisaged as a pathway to enhance the growth rate of an economy. This is because when there is employment, there is productivity. Hence, the achievement of full employment has often been seen as one of the germane macroeconomic objectives facing civilization. The opposite of employment is unemployment, which signifies wastage of human resources because goods and services that could have been produced are foregone.

Nwaeze, et al, (2014) shows that, as of 2009, Nigerian labor force employment by sector was 70 percent in agriculture, 20 percent in services and 10 percent in industry. The oil industry, though a major contributor to foreign exchange earnings, employs less than one percent of the labor force (Medee and Nenbee 2011). According to National Bureau of Statistics (2016), an active population and a gainfully employed labor force have high potential to contribute to the growth of national output for economic development.

2.1.21 The Effects Of Unemployment On Economic Development

Unemployment is one of the fundamental challenges facing Nigeria at the moment. Research has shown that unemployment was high in the 1980s, but the available reports from various local and international bodies gave evidence of joblessness in this decade are clear indications that there was no time in Nigeria's chequered history where unemployment is as serious as now, (Eze and Ogiji 2012). They observed that, one cannot really conclude that there research is against the believe that government at all levels have done nothing to reduce unemployment in Nigeria. They cited the creation of the skills acquisition centers scattered all over the country, the youth empowerment programs of the government, National Directorate of Employment (NDE) NAPEP, PAP, the SURE-P, YOWINN PROGRAMS, etc. these are government intervention programs aimed at creating employment, reducing poverty and enhancing economic growth in the country. They equally noted that, the Federal Government over the years has been claiming strong real GDP growth rate measuring at 6% or 6.5% since 2005 till date (Babalola and Aminu 2012).

This is apparently a paradox, A situation whereby there is a decade of strong real GDP of 6.5% economic growth, and in the same period, unemployment rate continues to rise annually from 11.9% in 2005 to 19.7% in 2009, and 37% in 2013 (Babalola and Aminu 2012) The apparent economic growth has not lead to economic development. The rate of poverty is still very high, the industries are still in shambles, technological development is still at rudimental stage, income inequality is high, maternal-mortality rate and child mortality rate is high, in fact Nigeria development index is still very low(Chuku, 2015).

The international Labor Organization (ILO) described Unemployment, as the biggest threats to the social-economic development of many economies (like Nigeria), globally rating unemployment at 12.6% of the world population. Nigeria's unemployment situation is more critical compared to other countries in Sub Saharan Africa. In South Africa,youth unemployment rate stood at 28.48%, youth unemployment rate in Ghana was 9.45% in 2020, while that of

Nigeria was 14.2% in 2020. The report shows that the bracket age of 15-35 years olds account, for close to 60 percent of the Nigeria's population and 30 percent of the work force. The report also indicates that approximately 4 million people entered into the labour market every year (Chuku, 2015).

The situation of Nigeria is worrisome going by the fact that the country is blessed with abundant human and natural resources that could be channeled towards generating employment for the youths of Nigeria. It is believed that the youth holds the key to achieving the attainment of economic growth and development. The fundamental questions that naturally arise from these facts is that why is the rate of unemployment continued to increase despite government fiscal policy measures and the existence of abundant human and natural resources?

Ogbole, et al. (2011) argued along the same line by observing that, Nigeria has the potential of being the source of growth and prosperity in the Sub Saharan African region, as it is made up of almost half of population of West Africa endowed with abundant natural resource. He noted that Nigeria's low economic performance is so worrisome and falls short of expectations of many in the region. Also, poverty has been on the increasewith a large number of the population living below the UNDP poverty line of less than $1 per day.

The level of unemployment in Nigeria has continued to increase geometrically per year,compared to other neighboring countries with same resources. Ogiogio (1996) stated that unless Nigeria reduces the rate of unemployment in the country, it will have no other parameter for measuring development or standard of living of its people. The World Bank (2017) reported that the brilliant performance of Japan and China is as a result of their continuously, enhancing employment and increasing productivity. Productivity enhances economic growth, reduces unemployment rate and poverty, and enhances a nation's balance of payments equilibrium and the human development of a nation (Omodera 2020).

Accelerated economic growth of the economy is one of the important ways of stimulating employment in Nigeria. Performance of the Nigerian economy has been far below expectation over the decades, which has reduced the chances of both human and material resources utilization. It is paramount to stimulate economic growth in Nigeria which will in turn lead to economic development (Eze and Oiji 2013).

It is clear that fiscal policy has a multiplier effect on the economy of any nation. As government embarks on expansionary fiscal policy by reducing tax and increasing expenditure, income increases. This increase in income positively affects savings and consumption. Consumers destroy finished products of private investment thereby given them reasons to produce more. As production by private investors increase, they will have reasons for expansion in both manpower and facilities. This creates employment in the economy. Also, as savings is increasing, banks liquidity and profitability also increases. This leads to increased employment. Financial institutions will have more funds for loan to private investors. This makes the private investment to flourish and create more jobs.

2.1.22 Fiscal Policy and Human Development

According to the United Nations Development Program (UNDP) report (2016) Nigeria rating on Human Development Index increased by about 7%in 2015. But, this Human development index growth rate has not led to the reduction of poverty in Nigeria as many expected. But, there was little progress in child mortality rate and school enrolment level. It is obvious that improvements in of human development index in Nigeria are marginal. In fact, as 2013, Nigeria has fallen up to seven positions in the global UNDP's2013, human Development Index rating. Though, there is increase in Economic growth, but it has not affected the ability of Nigerians to live they value.

The Report argues that economic growth, while welcomed and necessary is not enough. Rather than focusing on the mere expansion of output Nigeria needs to emphasize the importance of changing qualitative features of production that occur through the growth process. It needs an economic transformation for human development. The report further defined Economic transformation as a structural change in the economy, characterized by lesser contribution to GDP from the agricultural sector and greater contribution from industrial and service sectors, accompanied by a demographic transition from high birth and death rates to low birth and death rates. For economic transformation to work for human development it is crucial that the transformation process goes hand in hand with the creation of employment opportunities income growth, as well as social provisions.

2.1.23 The Status of Human Development in Nigeria

Human development is a well-known concept in Nigeria as it measures the standard of living, access to education and standard of living of the people. Nigerian government over the years, have tried achieving a high level of human development by incorporating the development plans in the economy. But, the country has not developed its Human Development in the desired way. Fromm independence, Nigerians expected a nation that would develop high human development yet, the state of human development in Nigeria is still very low till date (Klasen, 2014).

However despite the strong GDP growth (productivity per capita GDP) between 1999 and 2010, poverty did not decline materially (Agu, 2014) while the World Bank (2013) ranked Nigeria as one of fastest growing economies of the world with GDP rates 7.8% (2010), 7.4% (2011), 7.5%

(2012) and 7.6% (2013), the UNDP (2013) ranked Nigeria among the countries with low Human Development Index (HDI) of 0.471, placing the country at the 153rd position out of a total 186 countries sampled. Growth in Nigeria in the last decade therefore has not been adequate to be accompanied by reduction in widespread poverty and unemployment. This clearly shows that the present economic growth is not inclusive enough and needs to be addressed (Jones,Manuelli, & Rossi, 1993). He further said that the inability of economic policies to guarantee balanced growth to ensure high employment and equal opportunities which will enhance reduction of widespread poverty in the economy have formed the basis of research by most scholars. One of these macroeconomic policy options for addressing the problems of inadequate growth and widespread poverty in Nigeria is the fiscal policy (Audu, 2010).

2.1.24 Indicators of Human Development

The UNDP's Human Development Index HDI (2016) is a good indicator of the state of human development in Nigeria. The report aggregates life Expectancy, education, income indices as measures of the level of human development in a country, ranging from O for low human development to I for high human development. With an HDI score of 0.471 Nigeria falls into the bottom of quartile of countries with the lowest level of human development. Ranking at 153 out of 186 countries, the UNDP global Human Development Report for 2016 has therefore classified Nigeria as a low human development country. What is even more striking is that the country's position in the HDI ranking has decreased by seven positions in comparison to the previous year. Nigeria's low human development ranking is further confirmed by the multinational poverty index (MPI). According to Sovengen and White (2010) the MPI is a three dimensional measure of human development. He explained that MPI differs from HDI in one important aspect contrary to HDI, which measure average achievements in living standards, health and education, MPI measures a wide range of deprivations faced by individuals and households. In recent years

MPI has emerged as a strong alternative for measuring poverty. According to the Global Human Development Report (GHDR) for 2013, the poverty standards of various countries are presented according to their MPI values.

2.1.25 Human Development Index

HDI, which the UNDP adopted for measuring economic development, recognizes and emphasizes the multidimensional aspects of well-being (Bergh, & Henrekson, 2011). It measures the average achievements in a country in accordance with three basic dimensions of human development.

i. a long and healthy life, as measured by life expectancy of birth
ii. Knowledge as measured by expected years of schooling for children and mean years of schooling among the adult population. And
iii. A recent standard of living as measured by GNI (Gross National Income) per capital in US dollars. The three dimensions of HDI as prescribed by UNDP are summarized below:

HDI has three Basic Dimensions

Health	Life expectancy at birth
Knowledge	Expected years of schooling (EYS) and mean years of schooling (MYS)
Income	Gross national income per capita in purchasing power parity terms in US dollars.

The UNDP Report (2018) noted that since 2010 the UNDP has changed the methodology used in computing HDI, these changes have been twofold: First components indicators for education and income dimensions have been changed. For education, expected years of school (EYS) and mean years of schooling (MYS) have replaced gross enrolment for children and adult literacy as dimensional indicators.

Secondly, HDI is now computes as a geometric rather than arithmetic mean of the three dimensional indices (Health, education and income).

2.1.26 Multi-dimensional Poverty Index

The UNDP report (2018) explains that HDI only measures average achievement but cannot specifically identify deprived individuals or households. It further noted that all the dimensions in the definitions of and prospects towards understanding poverty point to it as some kind of deprivation (human-made or natural) and the starting point is the capacity of the individual or household to meet basic needs with food at the core. Galor (2005) opined that apart from food, basic needs cover clothing, shelter, basic physical and social security and elementary forms of basic freedom and decision making power. He further said that what is implied from the coverage in relation to fighting poverty is via capabilities (entitlements) and the ability to harness them. Income forms a primary catch-all notion and further generalization will reveal it as a reasonable proxy and benchmark to endow the poor with the needed capabilities. Hence in this study, apart from HDI, MPI is used to measure a wide range of deprivations that individuals and households may face.

The UNDP Report (2018) maintained that it is important to use the concept of weighted deprivations particularly in trying to understand the status of people below the poverty line. It is very possible for the proportion of people below a poverty line to decline without improving their weighted deprivation (as measured by MPI). This is because the income poverty measurement does not capture dimensions of social deprivation namely health education and other living standard aspects beyond income (Mitchel 2005).

Dimensions: Multidimensional Poverty Index (MPI) is a three dimensional assessment that represents 10 basic indicators in human development (education, health and standard of living) the 10 indicators in this measurement include:

Health: Nutrition and Child Mortality

Education: years of schooling and school attendance

Living standards: Type of cooking fuel, sanitation, availability of clean and safe water, access to electricity, type of floor and ownership of assets.

The UNDP has been using both HDI and recently MPI to measure and compare progress in human development across countries and overtime(Petrakos, 2007).

MPI measures the extent to which individuals are deprived in terms of these three components and subcomponents. In the Global Human Development Report (2014) Nigeria was classified as a low human development country Nigeria was ranked 153rd out of 18 countries (UNDP, 2018). It is important to note that Nigeria slid down the ranking compared to its position in the Global Human Development Report, (2011) where Nigeria was ranked 151 out of 179 countries (UNDP, 2016).

In the annual global human development reports the UNDP traditionally categorized countries into four categories according to their achievements on the HDI.

The GHDR 2014 categorized countries into the following quartiles:

i. Very high human development
ii. High Human Development
iii. Medium Human Development
iv. Low Human Development

In the above categories, in 2013 Nigeria achieved an HDI score of 0.471 and therefore fell into the group of countries with low human development.

2.1.27 How Fiscal Policy Affect the Poor

Glomm and Ravikumar (1994), opines that the ultimate objective of fiscal and monetary policy is to promote sound economic performance and high living standards of the citizens. He posits that this gives the citizens confidence in the currency as a store of value, unit of account and medium of exchange, so that they can make sound economic and financial decisions. Money policy impacts on the well-being of individuals depending on the policy measures put in place (Aghion, 2009).

Poverty is arguably the most pressing economic problem of our time. And because rising inequality, for a given level of income, leads to greater poverty, the distribution of income is also a central concern. At the same time, monetary policy is one of the modern age's most potent tools for managing the economy. Given the importance of poverty and the influence of monetary policy, it is natural to ask if monetary policy can be used to as a tool to help the poor Rasheed, (2010).

Rasheed(2010), examined the influence of fiscal policy on poverty and inequality both over the business cycle in the United States and over the longer run in large sample of countries and concluded that there are indeed important links between monetary policy and the well-being of the poor in both the short-run and the long-run, but that short and long-run relationships go in opposite directions. Expansionary monetary policy aimed at rapid output growth is associated with improved conditions for the poor in the short run, but prudent monetary policy aimed at low inflation and steady output growth is associated with enhanced well-being of the poor in the

long-run. They maintained that monetary policy can affect output, unemployment and inflation in the short run.

As a result, if poverty and inequality respond to these variables, monetary policy can affect the well-being of the poor. Furthermore, because unanticipated inflation can redistribute wealth from creditors to debtors, monetary policy can also affect distribution through this channel (Levine & Renelt, 2016).

The central role of fiscal policy in addressing poverty and inequality has long been acknowledged in the literature, yet empirical work on it, particularly in Africa, is very limited. Medee & Nenbee, (2011) explained that Fiscal policies affect poverty and inequality through progressivityof taxes, well- targeted transfers and quality of public expenditure. The relationship is, however, not linear; it requires adroit management of policymakers. On the other hands, fiscal policy can also be used to influence other structural factors affecting poverty and inequality especially human capital accumulation, factor endowment and labor market development. Simon

Kuznets in 1955 brought to prominence the linkage between economic growth and inequality by hypothesizing that economic growth at the initial stage raises and later reduces income inequality. Since then, several studies have tried to unearth key drivers of inequality–factors contributing to lopsided wealth and income distributions (Barro, 1990). Other important determinants of inequality include human capitalaccumulation (Petrakos, et al. 2007); labor and capital endowments and their returns (Mauro, 1995);trade openness. (Barro, 1996) using wages and employment as the transmission mechanisms; and economic integration leading to the adoption of common currency in Europe, which limits national governments to pursue their own income redistribution objectives (Solow, 1960).The key question, therefore, is how can we use fiscal policies to influence these factors that shape poverty and inequality? Fiscal space enhances economic efficiency and better distributional coverage.

Fiscal policies affect poverty and inequality through taxes, transfers and public expenditure. The relationship is not automatic or linear. The progressivity of direct taxes(such as those levied on income, wealth and inheritance) and indirect taxes (such as on consumption) is an important channel.

Efficient and well-targeted public spending on education, vocational and entrepreneurial training, and basic health services are vehicles to reduce poverty and income inequality. Forinstance, public spending that proactively supports girls and women's education could help address inter-generational poverty while those directed at vocational skillsof unskilled laborcould accelerate reduction inincome inequality.

Heavy and quality investment in human capital accumulation and development could drive poverty and inequality reduction. The ability of fiscal policies to substantially influence social change and labor market mobility, for instance, portends whether the impact on poverty and inequality is short or long term in orientation. For instance, transition from vulnerable groups to a middle class status is a social movement. Enhancing knowledge and cognitive skills of girls and women provides opportunity to transit from the excluded and marginalized groups to empowered groups that hold the key to propel fortunes of households (Liu, 1999).

2.1.28 The Economy of Ghana

The economy of Ghana has a diversified and rich resource base, like the manufacturing and exportation of digital technology goods, automotive and ship construction and exportation, and the exportation of diverse and rich resources such as hydrocarbons and industrial minerals. These gave Ghana one of the highest GDP per capita in West Africa. As a result of the GDP rebasement, in 2011 Ghana became one of the fastest-growing economies in the world (World Bank, 2019).

The Ghanaian domestic economy as at 2012 revolved around services that accounted for 50% of GDP and employed 28% of the work force. Apart from the industrialization associated with minerals and oil, industrial development in Ghana remains basic, often associated with plastics (such as for chairs, plastic bags, razors and pens). 53.6% of Ghana's workforce was employed in agriculture in 2013.

Ghana embarked on their currency re-denomination exercise, from Cedi (₵) to the new currency, the Ghana Cedi (GH₵) in July 2007. The transfer rate is 1 Ghana Cedi for every 10,000 Cedis.

Ghana is Africa's second biggest producer of gold (after South Africa) and second largest cocoa exporter. It is rich in diamonds, manganese ore, bauxite, and oil. Majority of its debt was canceled in 2005, but government expenditure was later allowed to balloon. Coupled with a fall in oil prices, this resulted to an economic crisis that forced the government to negotiate a $920 million extended credit facility from the IMF in April 2015.

With the economic program called Ghana Vision 2020, Ghana aims to achieve its goals of accelerated economic growth and improved quality standard of living for all its citizens, by reducing poverty rate through private investment, rapid and aggressive industrialization, and direct and aggressive poverty-alleviation efforts. This was released in the 1995 government report, Ghana Vision 2020. Nationalization and indigenization of state owned enterprises continues, with about two thirds of 300 parastatal enterprises owned by the government of Ghana. Many other reforms adopted under the government's structural adjustment program include increasing the control of exchange rate and increasing autarky and increasing restrictions on imports.

The Ghana: Vision 2020 forecast an assumed political stability and successful economic stabilization; the implementation of Ghana: Vision 2020 policy agenda on enhancing private sector growth; and aggressive government spending on social services, infrastructure and industrialization. It projection believes that Ghana's goals of reaching high-income economy status and newly industrialized country status will be realized between 2020 and 2039.

Poverty in Ghana

More than 2.8 million Ghanaians, which is about 10 per cent of the population, are living in extreme poverty.

The vast majority of them are said to be living below the global poverty line of a $1.9 spending a day.

According to the World Poverty Clock, real-time data projections indicates that about 28 Ghanaians escape extreme poverty every hour, giving the country a positive rank in the Sub-Saharan Africa and in the world.

Despite the good number of persons identified to be living below the poverty line, the report indicates that the country is on good track to achieving the Sustainable Development Goal (SDG) Goal 1 of ending poverty in all forms by 2030.

Ghana was the first nation in the region to reduce poverty by half, as expected by the Millennium Development Goal 1. Despite that, many of its people, especially in rural areas such as those in the Northern part of the country, still live in extreme poverty. In urban areas, extreme poverty is shown in the inequalities of access to social infrastructure including education and healthcare. Other features of extreme poverty in rural areas are: low income, social exclusion, and high rate of vulnerability to disasters and diseases.

Ethiopia is another African country that shares the same status with Ghana in Africa as of August 2018 with an expectation that both Ghana and Ethiopia would be able to reduce extreme poverty to at least 3% of their respective populations. A cursory mapping of the level of poverty in Ghana shows a gradual decline over the past decade.

Between 1991 and 2014, poverty levels had dropped by more than 50%.

As of 2014, 24% of the population of Ghana, representing 6.4 million people, was considered poor. The oil-rich Nigeria has being in danger of not meeting the Sustainable Development Goal (SDG) target as the number of persons living in extreme poverty keeps increasing. It is successfully overtaken India to become the leading country in extreme poverty in the world. Of its 197 million population, over 90 million are said to be living in extreme poverty, with at least 5 additional Nigerians becoming extremely poor every hour (UNDP, 2018).

Other countries on the same page with Nigeria that show rising level of penury are Somalia, Democratic Republic of Congo, Congo, South Sudan, Chad, Niger, Angola, Central African Republic and Zambia,

Data shows that South Africa, Namibia, Botswana, Mozambique, Zimbabwe, Tanzania, Kenya, Sudan, Eritrea, Libya, Mali, Guinea, Cote d'Ivoire, Sierra Leone, Gambia, Burkina Faso, Liberia, Benin, Togo, Guinea, Guinea Bissau are not on target of meeting the SDG goal of poverty reduction given their current extreme poverty escape rate. Reports show that in Gabon, Algeria, Egypt, Morocco, and Tunisia, less than 3% of their respective populations lived in extreme poverty. There are at present, over 630 million people living in extreme poverty all over the world.

Ghana Human Development Index (HDI)

The HDI is a measure for assessing long-term progress in the three basic dimensions of human development: a long and healthy life, access to knowledge and decent standard of living. A long and healthy life of a nation is measured by life expectancy of its citizens. Knowledge level is measured by man's level of education among the adult population, which is the average number of years of education received in a life-time by people aged 25 years and older; and access to learning and knowledge by expected years of schooling for children of school-entry age, which is the total number of years of schooling a child of school-entry age is expected to receive if the patterns of age-specific enrolment rates remain the same throughout the child's life. Standard of living is usually measured by Gross National Income (GNI) per capita expressed in constant of 2011 international dollars converted using purchasing power parity (PPP) conversion rates.

The Ghana's HDI value and rank Ghana's HDI value for 2017 is 0.592, which has put the country in the medium human development category, positioning it at 140th out of 189 countries and territories. From 1990 to 2017 alone, Ghana's HDI value increased from 0.455 to 0.592, signifying an increase of 30.1 percent. Table 2.3 below, reviews Ghana's progress in each of the HDI indicators. From 1990 to 2017, Ghana's life expectancy at birth rose by 6.2 years, mean years of schooling significantly increased by 2.2 years and expected years of schooling increased by 4.0 years. Ghana's GNI per capita also rose by about 115.9 percent between 1990 and 2017.

Table below 2.1 shows the components Human Development Index in Ghana between 1990 and 2017:

Table 2.1: Ghana's HDI trends based on consistent time series data and new goalposts:

Year	Life expectancy at birth	Expected years of schooling	Mean years of schooling	GNI per capita (2011 PPP$)	HDI value
1990	56.8	7.6	4.9	1,897	0.455
1995	57.5	7.7	5.7	2,035	0.473
2000	57.0	8.0	6.1	2,214	0.484
2005	58.7	8.7	6.4	2,556	0.509
2010	60.9	10.9	6.7	3,011	0.554
2015	62.4	11.7	6.9	3,861	0.585
2016	62.7	11.6	7.1	3,889	0.588
2017	63.0	11.6	7.1	4,096	0.592

Source: UNDP 2018 Statistical update

2.1.29 Sub Saharan Africa

The **sub-Saharan Africa** is geographically, the area of the African continent that lies south of the Sahara. According to the United Nations, it is made up of all African countries that are fully or partly located south of the Sahara. As against the North Africa, whose territories are part of the League of Arab states within the Arab world. The Arabic speaking states of Somalia, Djibouti, Comoros and the Arabic speaking Mauritania are geographically in Sub-Saharan Africa, though they are also members of the Arab League. The UNDP (2018) lists 46 countries of Africa's 54 countries as "sub-Saharan" excluding Algeria, Djibouti, Egypt, Libya, Morocco, Somalia, Sudan and Tunisia.

The Sahel is the transitional zone between the Sahara and the tropical savanna of the Sudan region and farther south the forest-savanna mosaic of tropical Africa.

Since around 3500 BCE, the Saharan and Sub-Saharan regions of Africa have been separated by the extremely harsh weather of the populated Sahara, forming a barrier interrupted by only the River Nile in Sudan, although the Nile was blocked by the river's cataracts. The Sahara pump theory highlights how flora and fauna (including *Homo sapiens*) left Africa to penetrate the Middle East and beyond. African pluvial era is associated with a Wet Sahara phase, during which larger lakes and more rivers existed.

The use of the term has been criticized, because it refers to the South only by cartography conventions and projects a connotation of inferiority, a vestige of colonialism, which some say, divided Africa into European terms of homogeneity.

Population

According to the 2017 revision of the World Population Prospects, the population of sub-Saharan Africa was 995,694,907 in 2016, with an expected growth rate is 2.3%. The United Nations predicts for the region a population of between 1.5 and 2 billion by the year 2050 with a population density of 80 per km^2 compared to 170 for Western Europe, 140 for Asia and 30 for the Americas.

Sub-Saharan African countries top the list of countries by fertility rate with 40 of the highest 50, all with TFR greater than 4 in 2008. All are above the world average except South Africa and Seychelles. About 40% of the population in sub-Saharan countries is younger than 15 years old, as well as in Sudan, with the exception of South Africa.

2.2 Theoretical Review

This section will review the fundamental theories that explain the linkages between fiscal policy and economic development and the relevance of these theories towards achieving the specific objectives of this study.

2.2.01 Fiscal Policy and Economic Growth

According to Benos (2009), economic growth is the basis of increased prosperity. Growth comes from the accumulation of both human capital physical capital and from innovations which lead to technical progress. Accumulation and innovation raise the productivity of inputs into production thereby increasing the potential level of output. The rate of growth can be affected by policy through the impact that tax policy has on the economic decisions. An increase in taxation reduces the returns on both real investment and financial investment. Lower returns mean lesser accumulation and innovation, leading to a lower rate of growth. This is the negative effect of taxation on investment.

Economic theories believe the idea that public expenditure and taxation are important channels of transmission between fiscal policy and economic development. In the 1990s, development in the theory of growth recognized that there might be a larger role for public spending in determining the rate of economic growth and development. According to Abdurrauf (2015), most public spending affects the productivity of the private sector, other unproductive spending only raise citizens' welfare or does neither, public provision of capital affects private output and some taxes distort investment spending. Changes in government spending composition, tax decision and deficit financing might distort economy's growth path. The principal means for fiscal policy to influence growth comes from adopting a longer-term development. The range of options available with regard to tax revenue and expenditure policies is mostly restricted in the short-term. Longer-term plan provides both a better way to consider inter-temporal trade-offs and offers increased scope to shift spending and tax policies in ways that might be significantly more growth enhancing (Chua, 1998).

Fiscal policy on government tax and government spending represents the bulk of public-sector activities. Most stabilization policies have centered on cutting government spending to achieve budgetary balance. But, the bulk of resource mobilization to finance essential government developmental policies must come from the revenue side. Apart from a well-organized and locally controlled money markets, most developing countries have had to rely mainly on fiscal policy measures to stabilize the economy and to mobilize domestic resources (Chuku, 2015).

Ocran (2009), in his research examined the effect of fiscal policy variables on economic growth in South Africa covering a period of 1990-2004, the study tried to examine the relationship between fiscal policy and economic growth. Vector auto regression model was employed to estimate the effects of government consumption and investment expenditure, deficit and tax receipts on economic growth. The results of the analysis concluded that, government consumption expenditure significantly impacts positively on output growth, but the size of the impact is less than that of consumption expenditure. The research also shows that tax receipts also have a positive effect on output growth while, the size of the deficit seems to have no significant impact on growth outcomes.

On the role of taxation, it is believed that tax induced distortions affects private sector allocation decisions and it is unfavorable in terms of factor accumulation and supply and hence may affect growth and development. This may be due to the assumption that taxes save lump-sum taxes are non-neutral and as well distortionary. There is also debate on taxation as short-run fiscal policy measure and its effect on long-term growth (Zagler and Durneker, 2003). Public spending and taxation policies have implications for scope and incidence of government services, for growth and for income distribution in an economy.

There is a general believe that macroeconomic stability is essential for growth but also a condition that the design of stability programs should be improved to enhance growth and development prospect.

On the interaction between fiscal policy and economic growth, it has shown that the potential impact of fiscal policy on the long-term growth also have generated substantial attention (Tanzi and Zee, 1996). Recently, the burgeoning work in the area of economic growth opines that fiscal policy can either enhance or decrease economic growth as investment is physical and human capital both of which can be affected by both taxation and government spending can affect steady growth rate (Babalola & Aminu, 2012).

In both literatures, the effect of fiscal policy on economic growth can be nonlinear. This may occur when the private sector response to fiscal policy is non –linear, showing a complex relationship between the size and the composition of public expenditure and revenue and growth.

There are reasons explain that for some low income economies, fiscal contractions may also be expansionary. As in the industrial economies, expansionary contractions are likely to be observed in countries are yet achieve a high degree of macro – economic stability (Easterly, 2005). For such countries, the main imperative of reducing inflation and achieving low budget deficits are such that increases in public expenditure may not have a statutory effect on growth (O'Nwachukwu, 2017).

According to Egbulonu & Amadi (2016), By contrast, countries that have achieved stabilization can exercise more choice than one expenditure priorities, including allocating resources to more important structural reforms such as the decompression of the civil service pay structure. In these countries, higher public expenditure even if it leads to higher deficits may raise, instead of contract economic activity (Babalola & Aminu, 2012).

In sum, the relationship existing between the fiscal policy and growth will vary across economies depending on their initial fiscal conditions. This has good implications for the econometric model used to link fiscal policy and economic growth. Another essential issue in the analysis is the relationship between the composition of fiscal deficit and economic growth. Most studies reveal that fiscal policy can have an indirect effect on private investment and economic growth by affecting the level of aggregate demand and monetary policy (Enache, 2009). Deficit financing by domestic sources may also result in inflationary pressures. High level of inflation has been found to decrease growth and may lead to macro-economic and financial instability in an economy (Nwosu and Okafor, 2014).

According to Sigh (2018), many Less Developed economies are faced with problems of large fiscal deficit-public spending greatly in excess of the public revenue- arising from a combination of both ambitious development programme and unexpected negative external shocks. With increasing debt burdens and falling commodity prices accompanied with growing trade imbalances, and decreasing external private/public investment inflows, a developing nation's government has little or no choice but to undergo several fiscal retrenchments. This means reducing government spending (especially on social services) and increasing revenues through increased or more efficient tax collection (Ogiogio, 1996). Efficient tax systems and spending pattern are crucial to the growth of the African economies. They contribute to financing the government provision of public goods and contribute to state building as well as good governance (Zhattau, 2013).

Ogiogio (1996) explained that the need to address the problems associated with fiscal policy has led to several reforms in Sub Sahara Africa. Many reforms have been undertaken over the last three decades on existing fiscal policy so as to achieve some improvement on economic stability, but are like these reforms may not have been on the right path to achieve the desired goal, as a result, the impact of fiscal policy in Sub Sahara Africa is relatively low. The low performance of government policy in actualizing the goal of economic stability in the region stemmed largely from the lack of recognition from the policy makers of the structure of the economy vis-a-vis the causality between government's fiscal activities and macroeconomic variables. Stabilization policy needs that policy makers should determine feasible targets, have a good knowledge of the workings of fiscal policy variables and as well effectively control these instrumental variables, the targets of these variables for which the government seeks desirable value (Zagler, 2003).

Nigeria is a country that solely depends on mineral extraction, so it is faced with two main challenges when formulating and implementing fiscal policy; in the long-run, the need to ensure that the fiscal stance is in line with the sustainable use of the mineral resources (oil and gas), while in the short run, the need to prevent the revenue decline from spilling over into the budget of the country (Nwaeze, et al 2014). From 1970, both government revenue and government expenditure have been volatile while rising over time. In periods of oil boom, government revenue and government expenditure have increased. The effects of such boom-bust fiscal policies are the transmission of oil volatility to the rest of the economy and disruptions to the stable provisions of government services. This has resulted to the failure over the years of public expenditure by failing to facilitate the diversification and growth of non-oil sector and failure in reducing poverty in the country (Nwaeze, et al. 2014).

Zhattau (2013) explained that Nigeria always suffer high tax losses as a result of the structure of the economy, semi-weak administration, and insufficient tax policies. There have been so many empirical researches on the relationship between fiscal policy and economic growth in Nigeria. Ogiogio (1996) explained that the economy lack the productive capacity to encourage growth if there is no new government investment. The research highlighted that government expenditure was essential for the maintenance of existing infrastructure to enhance economic growth and contribute to the social sector of the economy.

Ocran (2009) in his study highlighted that the poor performance of government policies in achieving desired macroeconomic objectives in the country is as a result of lack of recognition by the policy makers of the economy vis-à-vis the interrelationships between government's own fiscal activities and macroeconomic variables. He further concluded that there is the need to change the entire process of budgetary formulation, implementation and control in the country. At the moment, a lot of government expenditures do not pass through the actual budgeting process. Notwithstanding the transparency that this entails, it again tends to make the budget a neutral budget which it shouldn't be. Extra-budgetary spending should be reduced to the lowest level if they cannot be entirely eliminated. Every form of government spending needs to pass through the budget. To this end, budget monitoring and evaluation capacity should be strengthened.

The role of fiscal policy in ensuring stability and economic growth in Nigeria is of great essence. Fiscal policy raises domestic savings ratio. All tax revenue is essential in increasing the level of domestic saving. The central problem of tax policy in Nigeria is on how to get the needed revenue and as well, provide a correction for a high degree of inequality in the redistribution of income, without interfering with private savings and investments.

2.2.02 Fiscal Revenue and Economic Growth

In accordance with growth theories, natural resources, capital enterprises and technology are important for rapidly growth and development of any nation. Government expenditures on human development through spending on education, research development, provision of essential infrastructural facilities, health care development, housing and urban development, quality of statistics of the nation, securities and justice administration are possible or financed through the revenue from the nations resources, these indirectly leads to economic growth (Appah, 2010). This therefore explains that an efficient revenue allocation is greatly important in the equation of growth.

Babalola & Aminu (2012) opined that a nation that is often referred to be poor in resources today, may be considered rich in resources in the future, not because unknown resources are usually discovered, but because new users are discovered for the resources . Japan is one of such country which lacks in natural/mineral resources but, it is one of the advanced countries of the world because of the fact that it is able to discover new uses for its limited resources and minerals from other countries, it has succeeded in overcoming the deficiency of its natural resources through superior technology, new researchers and high knowledge.

According to Ugwuanya and Ugwunta (2017),for a country like Nigeria, the problem of economic growth cannot be achieved without allowing international free trade flows which is regarded as the “Engine of growth” that moved the developed of today’s economically advanced countries during the 19th and 20th centuries. The rapidly expanding export market provides an additional engine to growing local demands that will led to the social institution. These increased export earnings enhances the growth of developing economies of the 19th century through borrowing of funds in the international capital market at a low interest rates. The capital accumulation which is essential to economic growth as well as stimulating production, made possible through increased exports that led to a more diversified industrial structure (Nwosu & Okafor, 2014).

Fiscal policy is believed to have effect on economic growth of any nation. As theories have it that National Income (Y) is a function of Consumption (C), Savings (S), Government Spending (G), Private Investment (I) and Net Export. Fiscal Policy is the diver of all the determinants of National Income. When Government Spending increases, national income increases. This increases government spending affects Consumption, Savings, which in turn stimulates and enhances private investment which also leads to increased export. So, without fiscal policy an economy cannot function. This work shall determine how government fiscal policy over the years has affected economic growth in Nigeria and Ghana.

2.2.03 Theories of Taxation

According to Anyanwu (1997), economics as a discipline is considered as having of two parts: pure theory that deals with the set of rules under essentially abstract conditions, and applied economics that deals with the problems of practical experience in the real world. With the way of sharpening the mind, the first component is ought to be richer, and more intellectually satisfying. The second aspect is mostly held to be more relevant and more useful for the task of solving real-life problems of a nation (Biswas and Ram, 1986).

Careful look at the situation highlights that the difference is more a matter of convenience than of logic, because it is difficult to have one without the other. They are mainly two sides of the same analytical coin. The objective of any theory is to assist in the systematic solution of a practical problem; and real-world problems cannot, be meaningfully approached without a coherent method of organizing facts and examining possible alternative solutions to the problem (Mauro, 1995).

In the light of the above it could be believed that the theories of taxation have the aim of assisting in the systematic resolution of practical problems surrounding government financing through taxation. Four of such theories are discussed in below:

The Ability to Pay Theory of Taxation: This theory believes that people should pay tax according to his ability to pay.

The challenge with this theory is that it is difficult to measure with accuracy and fairness the ability to pay of people in superficially similar circumstances (Hassan, Waheeduzzaman, & Rahman2003). The theory that taxes should be levied in line with the taxpayer's ability to pay is often seen as the basic criteria of justice in taxation. It suggests that those who have equal ability to pay should carry the same burden. Horizontal equity of taxation means equal tax burden for those at same income level. Vertical equity of taxation means different burden for those with different abilities to pay (Medee and Nenbee, 2011).

In response to the question as to how to measure the ability to pay, Caselli, Esquivel,(1996) opines that it is usual in discussing this question to consider the sacrifice to the taxpayer of paying his taxes and then to deduce some scheme of distribution of the burden of taxation from some principle concerning sacrifice. The three most common of the principles are the principle of equal sacrifice, principle of promotional sacrifice, and principle of minimum sacrifice. To these principles, Davarajan,Swaroop, & Zhou,(1996) added a fourth, which is sometimes expressed as: the principle of leave them as you find them, or, principle of do not alter the inequality of incomes by taxation (Mankiw, 2003).

The principle of equal sacrifice, states that the direct money burden of taxation should be distributed so that the direct real burden on all taxpayers is equal; the principle of proportional sacrifice, has it that the direct real burden on every taxpayer is proportionate to the economic welfare which he gets from his income; While the principle of minimum sacrifice, opines that the total direct real burden on the taxpayers as a whole is reduced as small as possible; the principle of leave them as you find them, shows that the inequality of incomes should be neither increased nor reduced by taxation (Chen and Gupta, 2006).

In summary, the faculty theory of taxation is an attempt to make an explicit value judgment about the distributive effects of taxes.

Benefits Theory of Taxation: This benefit theory of taxation, according to Cashin (1995) shows a specific method for the distribution of the tax burden; taxes should be allocated on the basis of

benefits from government expenditures received by the tax payer. If it is shown that benefits received increase faster than income, then a case for progressive taxes can be made. The value of some benefits increases with income; example, police service and fire service protection are more important to the rich who has more property (Gujarati, 2004).

The advantage of this benefit is that it lays emphasis on the essential two-sidedness of government tax/government spending decisions. If people do not get benefits equal to their tax burden, the perhaps the government expenditure should not be undertaken. So, there is no means of determining the benefits to particular people from government expenditures on public goods such as national defense. Again, there is the issue of how to redistribute income under such system if the low income groups are taxed on the basis of benefits they received from a policy of income redistribution, the impact of such policies may be negated (Mankiw, 2003). As a result, they believe that the basis of progressive taxation is in line with benefits received is not popular. As it is, by definition, taxation is a payment without any direct and specific quid pro quo benefit to the payer.

Taxable Capacity Theory: The taxable capacity theory is an expression of the level to which a person/tax payer can be taxed. Caselli, et al (1996) explains that it is difficult to decide the taxable capacity of a tax payer, for it depends to a considerable extent on what the state does with the revenue it gets from the tax. The extent of taxable capacity may be considered to be the point above which the additional taxation would produce economically harmful results (fall in the national income) that outweigh the gains from the service provided by the state from the taxation.

If the state uses tax to provide services for the rural community, it is really returning to taxpayers the money they had already paid in taxes, depending on the income; the gain to the taxpayer may be less than his loss of satisfaction as a result of the payment of taxes (Mitchell, 2005).

Gerson (1998) took a look at the theory of taxable capacity, distinguishing what he named the 'absolute taxable capacity of single community' and the 'relative taxable capacity of two or more communities'. After his analysis, he summarized that "relative taxable capacity is a real, which may, however, be equally well shown in other terms, while absolute taxable capacity is a myth. He however suggest that it would be well that the phrase "taxation capacity" be banished from all serious discussions of public finance.

Single-Tax System Theory: Single-tax system as a theory advocates that the government should increase its entire revenue from a single tax on income, hence income taxes can be made equitably assessed on individuals than other types of taxes (Ogiogio, 1996).

The criticism of this theory starts from the fact that to increase the enormous amount of public revenue needs by a modern government, such a single tax would have to be very high and would therefore have a serious negative effect on the desire to work and it would have an adverse effect on the size of the national income (Omoniyi, 2018).

The experts in France proposed a single tax on the economic rent of land as a result that this was where all taxes ultimately fall, which would, therefore, save trouble and misunderstanding to put them there. But, this idea involved a false theory of incidence of taxation.

Another weakness of this theory as is that it may lead to a very bad distribution of the burden of taxation. For a millionaire who owned no land, would pay no taxes, while a poor man who invested all his savings in landed property might pay in taxation in respect of the land on which it stood a considerable proportion of his income. A single tax on land has no relation to individual’s ability to pay tax (King and Sergio, 1990).

Tax evasion may be comparatively easy under a single tax system unlike in a multi-tax system where the check and counter-check provided is readily exposed to an evader. In a multi-tax system, it is generally preferable to a single tax system, too great a multiplicity is not desirable (Easterly and Rebelo, 1993).

2.2.04 Public Expenditure and the Growth Theory

The relationship between government and economic growth has been discussed in literature as coming through the array of factor accumulation. Government controls the accumulation of physical capital directly through investment in government capital, for example, infrastructure such as roads – and indirectly through its budget as budget deficits absorb saving that otherwise would be invested in physical capital.

Beyond factor accumulation, government policy can significantly affect the speed of technological progress, both through direct government funding of research, and through government administration of the patent system, which allows researchers to reap rewards and thus provides an incentive for inventive activity (Audu, 2012).

In the macro-models of government expenditure analysis, there are basically three theories discussed, namely, Wagner's Law, Peacock and Wiseman's analysis and development models of government expenditure growth.

Wagner's Law

The foremost theory of public expenditure is traced to Adolph Wagner (one of the leading German economists of his time) who in 1883 propounded an interesting development thesis, which is said that as a nation develops its public sector (and consequently public spending) will definitely grow in importance. He was interested in the share of Gross National Product (GNP) putting up by the public sector, hence as quoted in Audu (2012), noted that the law of increasing expansion of government and particularly state activities becomes for the fiscal economy the law of the increasing expansion of fiscal requirements.

This theory is also known as the law of increasing state spending. Wagner observed this theory first in his own country and later extended it to other countries (Abata, Kehinde, Borarinwa, 2012). This theory holds that government expenditure increases as income growth of any nation expands. He believes that there is a functional relationship between increased economic activities and government spending. So as the economy of any nation is increasing, their spending increases as revenue generation increases. Wagner revealed that the development of any industrial economy is associated and accompanied by an increase in public spending as a share of the Gross National Income. So as progressive and developing nations grow, the share of public sector in the nation's economy continues to grow (Abata, Kehinde, Borarinwa, 2012). He continued to suggest that the increase in expenditure of the state would be as a result of increase in social activities of the state, administrative and defense/protective activities of the state and increase social and welfare functions of the state.

This research shall rely more on this theory in developing a model of functional relationship between fiscal policy and economic development. So, it is based on this theory that the model of this research is built. This theory will help this research achieve the objectives on how fiscal policy affect economic development in Sub Saharan Africa, as if believes that there is a functional relationship between growth in government fiscal activities and growth in economic growth. And government fiscal policy is crucial for the growth and development of any nation.

Peacock and Wiseman's Analysis

Peacock and Wiseman's (1967) study is believed to be one of the best known analyses of the time pattern of public spending.The main believe is that government expenditure does not increase in a smooth and continuous manner, but in jerks or step-like fashion. The analysis was based on the political theory of public spending determination, ‘that governments like to spend more money, that citizens do not like to pay higher taxes, and that governments need to pay some additional attention to the wishes of their citizens’. Peacock and Wiseman opened up the analysis that public spending is to be influenced at the ballot box.

They believed that the voter as an individual who enjoyed the benefits of public goods and services but who hates paying taxes. They also saw taxation as setting a constraint on government spending. To them, as the economy and incomes grew, tax revenue would increase, thereby enabling the public spending to grow in line with the GNP. In normal times, public spending may show a slow upward trend, even though within the economy there may be a divergence between what people regarded as being desirable level of public spending and a desirable level of taxation. In the periods of social upheaval, this slow upward trend in public spending would be disturbed, and would coincide with war, famine, or some large scale social disorder which may require a rapid increase in public spending. In order to finance the rise in public expenditure, the government would be forced to increase the taxation levels, which, however would, be regarded as acceptable to the electorates during the crisis periods. This is what Peacock and Wiseman called the displacement effect (Abata, et al. 2012).

Following the period of crises, public spending does not fall to its original level. A war is not fully paid for from taxes and nations borrow and debt charges have to be met after the period. Changes in social and political ideas and institutions, may lead to the evolution of the functions of government, and may also influence the nature and significance for public expenditures of such social upheavals as wars. On the contrary, the displacement effect may be the origin or lasting changes in ideas and institutions; periods of war are, for instance, a fruitful source of both new ideas about society and of new administrative procedures. In their own words, Peacock and

Wiseman (1967) said, “All we suggest, is that in communities and over periods in which the economic activities of the state are in fact growing in importance and in which social disturbances occur, the nature of political power will usually produce a time pattern of growth characterized by a displacement effect of the kind described”.

Another impact that they thought might operate is the inspection effect. They believed that this arises from voters’ keen knowledge of social problems during the period of upheaval. The government therefore, increases the scope of services it provides to improve these social conditions, and because the electorate’s perception of tolerable levels of taxation does not return to its previous level, the government may be able to finance these higher levels of expenditure originating in the expanded scope of government and debt charges. The government and the people review the revenue position and agree to the required adjustments to fund the increased spending. They achieve a new level of tax tolerance and would be ready to tolerate greater burden of taxation, as a result the general level of expenditure and revenue goes up (Batia, 2006). In this way, the public expenditure and revenue are stabilized at a new level till another distortion or upheaval occurs to lead to a displacement effect. Hence, each major social upheaval may cause the government assuming a larger proportion of the total national economic activity (Anyafor, 1996).

This theory shall assist in determining how government spending and taxation affect economic growth in Nigeria and Ghana, as the theory believes that people do not like to pay tax, while government enjoys spending money.

The Musgrave and Rostow Development Model

The development model of public expenditure may be traced to the works of Musgrave 1969 and Rostow (1971). Following their research, in the early stages of economic growth and development, public sector investment as a proportion of the total investment of the economy is usually very high. At this time, the public sector provides social infrastructure, like roads, transportation systems, sanitation systems, health and education, law and order, and investment in human capital. According to the research, the public sector is necessary to gear up the economy for start-up into middle stages of economic and social development. In the next stage of growth, the government continues to provide investment goods but complementing the private sector investment.

Musgrave opines that all through the development period, as the total investment-GDP ratio increases, the share of public sector investment falls. Rostow claims that when the economy gets to the maturity stage, the mix of public expenditures will shift from infrastructures to increasing spending on education, health and welfare services (Anyanwu, 1997).

At this stage of high mass consumption, income maintenance programs and policies are formulated to redistribute welfare, which will grow significantly in line with public expenditures and also relative to GDP.

This theory believes that public spending growth is a result of government need to provide the basic amenities needed to sustain life. As government has the responsibility of providing good roads and enhanced transport system, sanitation system and ensure law and order,

2.2.05 Growth and Development Theories

Theodore William Schultz Development Theory

This theory believes that the speed of recovery of an economy depends mostly on its healthy and well educated population. The theory shows that education makes citizens to be productive and good health care keeps the education investment within and able to produce. One of the main contributions of this theory was later called Human Capital Theory, and inspired more work in the international development in the 1980s, thereby, motivating investments in vocational and technical education by Bretton Woods systemInternational Financial Institutions such as the International Monetary Fund and the World Bank. In conducting the research, among the poor farming nations of Europe, relating to farmers and political leaders in small towns, He was "not scared to get his shoes a little muddy." He observed that the help the United States sent in the form of food or money was not only of little assistance, but, actually dangerous to such nations, as the farmers and agricultural producers within those nations were unable to compete well with the free prices of the "aid" sent, and they were not able to sustain themselves or even invest the money they got from crops back into the economy (Anyafor, 1996). His theory has it that, the U.S.A. instead used its resources to assist educate these rural producers and provide them with technology and innovations they would be more stable, productive and be self sustaining in the long run. This was another major part of his work titled: "Investment in Human Capital". He concluded that it is better to develop the human capital of any nation than to give the poor food and little “aid” for food (Sigh, 2018).

Schultz summarized that foreign assistance was actually destroying the local economies in Europe, because as aid were distributed for free, economies of local nations were distorted and smothered as they could not compete with price (Audu, 2012).

This theory would therefore help the researcher achieve the objective of finding out how fiscal policy has affected human development in the region of Sub Saharan Africa as this theory believes that the speed of development of any nation, depend on how healthy and educated the people are.

Lewis Structural Change Theory

The Lewis theory of 1955, dominated development research between 1960 and 1970. It was also known as the two sector model, and the surplus labor model. It focused on the need for nations to transform their structures, from agriculture, towards industrial activity, with a high productivity of labor.

An economy could start with two sectors; the rural agricultural sector and the urban industrial sector. Agriculture generally under-employs workers and the marginal productivity of agricultural labor is zero. The theory believes that when workers are moved out of agriculture, it does not decrease productivity in the whole economy. Labor then is released for work in the more productive, urban, industrial sector which in turn results to Industrialization given the rise in the supply of workers who have moved from the land (Galor, 2005). Industrial firms start to earn profits, which can be reinvested into even more industrialization, which may lead to capital accumulation. Once capital accumulates, further economic development can sustain itself (Adewale, 2018).

This theory laid emphasis on industrialization and industrialization stimulates economic growth, generate employment, reduce poverty and enhance the standard of living of the people. This theory shall help us in determining the effect of government fiscal policy on economic growth, unemployment, poverty and human development index in Sub Saharan Africa.

Raul Prebisch Dependency Theory

This Prebisch dependency theory opines that increases in the wealth of the richer nations appears to be at the expense of the poorer ones.

The dependency theory is based on a Marxist view of the world that sees globalization in terms of the spread of market capitalism and the exploitation of cheap labor and resources in return for the outdated technologies of the West. The dominant believe of dependency theorists is that there is a dominant world capitalist system that depends on a division of labor between the rich 'core' countries and poor 'peripheral' countries. Then, the core countries will exploit their dominance over an increasingly marginalized periphery (Klasen, 2014).

Dependency theory advocated an inward looking approach to development and an essential role for the state in terms of imposing barriers to trade, making inward investment more difficult and promoting nationalization of key industries.

Although, the theory is still a popular theory in history and sociology, this dependency theory has disappeared from the mainstream of economic theory since the collapse of Communism in the early 1990s. The considerable inefficiencies associated with state involvement in the economy and the growth of corruption, have been exposed in countries that have followed this view of development, most a small number of Sub-Saharan African economies, including Zimbabwe (Olotu, et al. 2015).

It is clear that developing countries borrow from the wealthy developed countries in order to finance the budget deficit. This work includes budget deficit as one of the explanatory variables of fiscal policy and shall determine how this government borrowing affects economic growth, employment generation, poverty reduction and enhancement of human development of Nigeria and Ghana.

Walt Rostow Linear Stages of Growth Model

Between 1950s and the early 1960s, the process of development was viewed as a series of successive stages through which all countries must pass.With the right combination of savings, investment and foreign aid, these countries were put on the path to development, thereby making development synonymous with aggregate economic growth (Adewale, 2018).Walt Rostow opines that the advanced countries had all passed through a series of steps that enhanced their growth and development. The developing countries were still in either the traditional society or the pre-conditions stage and had to follow a set of rules to take off into self-sustaining economic growth (Havi, et al. 2015).

The main strategy to help this take off was the mobilization of domestic and foreign savings so as to generate sufficient investment to accelerate economic growth and development.

Harrod- Domar Model

This is the economic mechanism through which more investment leads to more growth. In simple words the Harrd- Domar theory of economic growth opines that the rate of growth of GNP is influenced by both the national savings ratio and the national capital-output ratio.

The most important strategies to grow for economies is to save and invest a certain proportion of their GNP. But, the actual rate at which they can grow for any level of saving and investment, will depend on how much additional output can be had from an additional unit of investment (Olotu 2015).

According to this theory the major problem of growth is the capital constraint, which is the reason for transfer of capital and technical assistance to the developing countries.

This theory believes that more investment spending leads to growth and development of a country. This would help in determining the effect of government increasing spending on economic development of Nigeria and Ghana.

2.2.06 Fiscal Conservatism

Advocates of fiscal conservatism objects Keynesianism by arguing that government should run a balanced budget (and a surplus to pay down any outstanding public debt), and that deficit spending is always a bad policy (Medee and Nenbee, 2011).

Fiscal conservatism has academic support, associated with the neoclassical-inclined Chicago school of economics, and has significant political and institutional support, with all of the United States except Vermont having a balanced budget amendment to their state constitution, and the Stability and Growth Pact of the European Monetary Union punishing government deficits of 3% of GDP or greater. Proponents of fiscal conservatism date back to Adam Smith, founder of modern economics. Fiscal conservatism was the position until the Great Depression, associated with the gold standard and expressed in the now outdated Treasury View that government fiscal policy is ineffective.

The usual argument against government deficit, dating to Adam Smith, is that households should not run deficits one should have money before one spends it, from prudence and that what is correct for a household is correct for a nation and its government. Another argument is that debts must be repaid, and thus it is burdening future generations to run deficits today, for little or no gain (Galor, 2005).

A similar argument is that deficit financing today will require increased taxation in the future, thus a burden to future generations. Others argue that because debt is both owed by and owed to private individuals, there is no net debt burden of government debt, just wealth transfer (redistribution) from those who owe debt (government, backed by tax payers) to those who hold debt (holders of government bonds).

Another line of argument, associated with the Austrian school of economics, is that government deficits are inflationary. Anything other than mild or moderate inflation is generally accepted in economics as a bad thing. In practice, this is argued to be as the governments pay off debts by printing money, increasing the money supply and creating inflation, and is taken further by some as an argument against fiat money, and in favor of hard money, more especially the gold standard.

Some Post-Keynesian economists believes that deficit financing is essential, either to create the money supply (Chartalism) or to satisfy demand for savings in excess of what can be satisfied by private investment(Solow, 1956).

Chartalists argue that deficit financing is logically necessary because, in their view, fiat money is created by deficit spending: fiat money cannot be collected in taxes before it is issued and spent; the amount of fiat money in circulation is exactly the public debt, money spent but not collected in taxes. In a situation, "fiat money governments are 'spend and tax', not 'tax and spend'"——deficit spending comes first (Palley, 1996). Chartalists argue that nations are fundamentally different from households. Governments in a fiat money system, which have debt in their own currency can issue other liabilities, their fiat money, to settle their interest bearing bond debt. They will not go bankrupt involuntarily because this fiat money is what is used in their economy to settle debts, while household debts are not so used (Magazzin, 2010).

But it is hard to understand how the concept of "budget busting" applies to a government as a sovereign nation and issuer of its own currency, can always create dollars to spend. There is, in other words, no budget to "bust". A national "budget" is merely an account of national spending, and does not represent an external constraint in the manner of a household budget (Landau, 1983).

An alternative argument for the necessity of deficits was given by U.S. economist William Vickrey, who argued that deficits were necessary to satisfy demand for savings in excess of what is satisfied by private investment.

Larger deficits, big enough to recycle savings out of a growing gross domestic product (GDP) in excess of what can be recycled by profit-seeking private investment, are usually not an economic sin but an economic necessity (Mitchel, 2005).

2.2.07 Crowding-Out Theory

The crowding out effect is an economic theory which stipulates that rises in public sector spending drive down or even eliminate private sector spending. Though, the “crowding out effect” is a general term, it is most often used in reference to the stifling of private spending in areas where government purchasing is high. The crowding out effect is also known as crowding out (Cashin, 1995).

Crowding out is argued to be a phenomenon that occurs when increased government involvement in a sector of the market economy significantly affects the remainder of the market, either on the supply or demand side of the market.

One type most frequently discussed is when expansionary fiscal policy reduces investment spending by the private sector. This increased borrowing 'crowds out' private investing.

Ordinarily, crowding out was related to an increase in interest rates from the borrowing, but was broadened to multiple channels that might leave total output little changed or smaller.

According to Poot (2000) Crowding out may be used to refer government providing a service or good that would have otherwise been a business opportunity for private industry, and be subject only to the economic forces seen in voluntary exchange. Crowding out also mean the government spending is using up financial and other resources that would otherwise be used by private enterprise (Musgrave, 1969).

One channel of crowding out is a reduction in private investment that occurs as a result of an increase in government borrowing. If an increase in government expenditure and/or a decrease in tax revenues results to a deficit that is financed by increased borrowing, then the borrowing can lead to increased interest rates, leading to a decrease in private investment. There are some controversies in modern macroeconomics on this subject, as different schools of thought differ on how households and financial markets would react to more government borrowing under various circumstances (Sarel, 1996).

The extent to which crowding can occur depends on the economic situation. If the economy is at capacity or full employment, then the government suddenly increasing its budget deficit (e.g., via stimulus programs) could create competition with the private sector for scarce funds available for investment, leading to an increase in interest rates and reduced private investment or consumption. Thus, the effect of the stimulus is offset by the effect of crowding out. On the other hand, if the economy is below capacity and there is a surplus of the available funds for investment, an increase in the government's deficit does not lead to competition with the private sector. In this scenario, the stimulus program would be more effective. In sum, changing the government's budget deficit has a better impact on GDP when the economy is below capacity. In the aftermath of the 2008 sub-prime mortgage crisis, the U.S. economy maintained well below capacity and there was a huge surplus of funds available for investment, so increasing the budget deficit put funds to use that would otherwise have been idle.

Audu, (2012), the macroeconomic theory behind crowding-out provides some useful intuition. What happens is that a rise in the demand for loanable funds by the government (e.g. due to a deficit) shifts the loanable funds demand curve rightwards and upwards, increasing the real interest rate. A higher real interest rate raises the opportunity cost of borrowing money, decreasing the amount of interest-sensitive spending such as investment and consumption. Thus, the government has "crowded out" investment in the economy.

According to Klasen (2014), crowding-out effect of government expenditure on private investment shows itself, directly or indirectly. Indirect, crowding-out occurs through an increase in interest rates and prices but, direct crowding-out occurs with the reduction of physical resources available to the private sector.

From literature, the Neo-classical view point is that crowing-out of private investment by government spending occurs when the government decides to rise its spending. In the opinion of the Neo-classical theory, government budget deficits increase the level of consumption in the economy. Since the Neo-classical view believes that the economy is generally at full employment level, they maintain that increasing, consumption would result in a decrease in savings (Nwaeze, et al. 2014). They also noted that interest rates may make private investment less profitable, hence private investment would tend to decrease and consequently government expenditure would crowd-out private spending.

In contrast to the Neo-classical view, the Keynesian view believes that an increase in government expenditure stimulates the domestic economic activity, thus crowds in private investment rather than crowd-out (Odewummi, 2012). According to the Keynesian view, it is rare for an economy to always be at the full employment level. In general, economies are at under employment level. In such a case, the sensitivity of investment to interest rates becomes low.

According to Ogbole, et al. (2011), the crowding-out effect of budget deficit on private investment has been influenced to a large extent by government policies that have led to a persistent of the budget deficits and also by measures employed to finance the growing deficit. They maintained that in a bid to increase the economic, social and basic infrastructural facilities in Nigeria, the pursuit of budget deficit have made Nigerian government to finance those deficits through the sale of government bonds in the stock market, these bonds decreased the amount of loanable funds available for private sector investors by the increase in the interest rate, thereby leading to a decrease in private investment and poor economic growth of the economy in the short-run. Nwosu and Okafor (2014) maintained that high budget deficits in Nigerian over the years have reduced the amount of loanable funds available for private sector investors for investment in the financial market through an increase in the interest rate.

It is believed that government spending, revenue and borrowing have crowding out effect on the economy of any nation. This theory of crowding out shall be relevant in determining the effect of government revenue, government expenditure and government borrowing on economic growth, employment generation and poverty reduction in Nigeria and Ghana.

2.3 Empirical Studies on Fiscal Policy

The most recent empirical literatures show that economic growth is significantly affected by fiscal policies, although there remains some lack of agreement on the sign of the effects.

Economic theory suggests that fiscal multipliers are more likely to be positive when economies are relatively closed, government debt is low and fiscal expansion focuses on spending. There is also some evidence of negative fiscal multipliers which is no clear consensus on the precondition for such an outcome.

Gerson (1998) surveyed the theoretical and empirical literature on the effect of fiscal policy variables (government expenditure program and taxes) on economic growth. He concluded that educational attainment and public health status had significant, positive effects on per capita output growth; economies that were open to international trade grew faster than those that were closed, therefore fiscal policies that encouraged openness should encourage growth.

Caselli, Esquivel, (1996) found robust positive contribution of the government expenditure ratio (net of defense and educational expenditure) to growth.

Kneller,Bleaney and Gemmel, (1999) found that public expenditure and taxation only affected growth if they were productive and distortionary, respectively; productive government expenditure was found to positively affect growth, whereas distortionary taxation was found to be harmful for growth. With this distinction they argued that both sides of the government budget should be considered in estimating the impact of fiscal policy on growth, as their financing offset the growth-enhancing effects of productive expenditure.

Zagler and Dürnecker (2003) surveyed the literature on fiscal policy and economic growth. They presented a unifying framework for the analysis oflong run growth implications of government expenditures and revenues

They found that the level of education expenditure and the growth rate ofpublic infrastructure investment both exhibited a positive impact on the growth rate of the economy.

Tanzi and Zee (1997) examined systematically the various ways that the main fiscal instruments (tax policy, public expenditure policy, budget policy) influenced economic growth through their impact on the determinants of growth.

Yasin, (2003) studied the relationship between government expenditure and economic growth. His studies re-examined the effect of government spending on economic growth using panel data set from Sub-Saharan Africa. The results from both estimation techniques indicated that government spending, trade-openness, and private investment spending all had positive and significant effect on economic growth.

Biswas and Ram (1986) used data from 55 countries over the period 1960 1977 and found that defenses expenditure has no significant effect on output growth.

Abu-Bader and Abu-Qarm (2003) used multivariate cointegration and variance decomposition techniques to investigate the causal relationship between government expenditure and economic growth. Cross section growth regressions had been used to assess the relationship between defense expenditure and economic growth. They found that when considering overall government expenditure, there was bi-directional causality between government spending and economic growth with a negative long run relationship in the cases of Israel and Syria, and a unidirectional negative short-run causality from economic growth to government spending in the case of Egypt.

Landau (1986) examined the possibility that the impact of defense expenditure on output growth was nonlinear, with relatively low levels of defense expenditure enhancing output growth, but relatively low levels of defense expenditure inhibiting growth. He found that this was in fact the case, with a positive relationship between defense expenditure and output growth holding until defense expenditure reached about 4 percent of GDP and a negative relationship taking over at about 9 percent of GDP. For sub-samples restricted to Latin America and Africa, he found a significant, positive relationship between defense expenditure and the share of government education and health expenditure in GDP.

Hassan,Waheeduzzaman & Rahman, (2003) stated that there were essentially four arguments showing military expenditure retarding economic growth. First, higher defense expenditures could crowd out both public and private investment that might be more growth-oriented and need-based than those of defense spending. This crowding out of essential investment might have an adverse impact on the long-run economic growth. Second, defense expenditure can cause balance of payment problems if hard-earned foreign exchanges were used to purchase arms and defense hardware. Third, defense might inhibit growth by diverting resources from the export sector, which was often considered an engine of growth. Finally, the defense sector limited growth through inefficient bureaucracy and excess burdens created by taxes necessary to finance military spending. Since defense spending could cause both positive and negative effects, its final impact on growth would depend on the strength of the opposing forces.

Devarajan,Swaroop, & Zhou, (1996) investigated the relationship between the compositions of public expenditure and economic growth. Using a simple, analytical model, they derived conditions under which a change in the mix of public spending could lead to a higher steady-state growth rate for the economy. Based on the model, their empirical results suggested that expenditures that were normally considered productive could become unproductive if there was an excessive amount of them.

Glomm and Ravikumar (1994) considered the relationship between government expenditure on infrastructure or education and economic growth, and the implication of their models yield depended on how the expenditures were being conceived and how they looked at the effects oftaxes that had to be raised to finance the expenditure. Therefore the general implications that seem to follow from these models are that one expects partially a positive correlation of growth with productive expenditure (e.g.infrastructure and education) and partially a negative correlation withgovernment consumption and distortionary taxes.

Also, Abdullah,Habibullah, Baharunshah, (2008) used the Pedroni Cointegration method to establish a long run relationship between fiscal policy and economic growth.They found a positive and statistically significant impact of health and education expenditure, aggregate of government expenditure and aggregate of fiscal policy on real per capita GDP. They also found that thedefense expenditure, distortionary taxation and budget balance are significantly and negatively related to real per capita GDP.

Barro and Sala-i-Martin (1992) found that government expenditure in education, health, and other services could contribute indirectly towards raising the marginal productivity of private sectors via their contribution on human capital accumulation.

Chen and Gupta (2006) examine the government expenditure in health and education and other structural factors that may have an effect on economic growth. They apply the GMM estimation technique which is the set explanatory variables included in the growth regression specification arebased on the endogenous growth theory and can all be considered to be important determinants of economic growth. The results show that the coefficient on government expenditure in health and education is negative but is small in absolute value. Many other studies on the relationship between fiscal policy and growth were conducted before the relevant endogenous growth models were developed, i.e. from the early 1980s. Landau (1983) using cross-sectional data from 104 countries found a negative relation between public consumption as share of GDP and growth per capita using Summers-Heston data. Barro (1989), with data from 98 countries in the post- World War II period, found that government consumption decreases per capita growth, while public investment does not affect growth. Levine-Renelt (2016) found that most results from earlier studies on the relationship between long-run growth and fiscal policy indicators are fragile to small changes in the conditioning set.

Easterly-Rebello (1993) used cross-section data for 100 countries for 1970-1988 and panel data for 28 countries for 1870-1988. They found that public transportation, communication and educational investment are positively correlated with growth per capita and aggregate public investment is negatively correlated with growth per capita, although they admitted that many fiscal policy variables are highly correlated with initial income levels and fiscal variables are potentially endogenous.

Cashin (1995) estimated a positive relationship between government transfers, public investment and growth and a negative one between distortionary taxes and growth from panel data for 23 developed countries between 1971 and 1988.

Devarajan,Swaroop and Zhou . (1996) showed that public current expenditures increase growth, while government capital spending decreases growth in 43 developing countries over 1970-1990.

Kneller, Bleaney, & Gemmel, (1999) showed that the biases related to the incomplete specification of the government budget constraint present in previous studies are significant and after taking them into account, they found for a panel of 22 OECD countries for 1970-1995 that: Distortionary taxation hampers growth, while non-distortionary taxes do not. Productive government expenditure increases growth, while non-productive expenditure does not and long-run effects of fiscal policy are not fully captured by five-year averages commonly used in empirical studies.

Poot, (2000), in a survey of published articles in 1983-1998 did not find conclusive evidence for the relationship between government consumption and growth, while he found empirical support for the negative effect of taxes on growth. Also, he reported a positive link between growth and education spending, while the evidence on the negative growth impact of defense spending is moderately strong. Poot(2000) presented evidence of a robust positive association of infrastructure spending and growth.

Easterly, (2005) found a significant growth effect of budget balance, which disappeared when extreme observations were excluded from the analysis. It therefore seems that there is widespread non-robustness of coefficient signs and statistical significance even within similar specifications for similar variables. There are some possible explanations for these differences. The most important, in our opinion, is the absence of a generally accepted theoretical framework to guide the empirical research (Galor, 2005). This framework would pin down the most important determinants of growth, being fiscal policy variables or not. If such a framework were available, we could test the statistical significance of the postulated fiscal and non-fiscal determinants of growth and avoid the omitted variable bias that empirical results possibly suffer. Another issue is the inappropriate classification of some expenditure types as productive/unproductive, a question over which there is some debate in theoretical literature (KBG, 1999).

Enache, (2009) investigated the connection between fiscal policy and economic growth in Romania using Forecasted time series data which covered periods between 1992 and 2007. The empirical results indicated weak evidence for the positive impact of fiscal policy on economic growth. The study concluded that government authorities could use fiscal policy to affect economic growth in an indirect manner.

Karimi and Khosravi (2010) investigated the impact of monetary and fiscal policies on economic growth in Iran using autoregressive distributed approach to cointegration between 1960 and 2006. The empirical results indicated existence of long-run relationship between economic growth, monetary policy and fiscal policy. The results further revealed a negative impact of exchange rate and inflation (as proxies for monetary policy), but a positive and significant impact of government expenditure on growth.

Ebiringa and Charles-Anyaogu (2012) studied impact of government sectorial expenditure on the economic growth of Nigeria. The result showed that expenditure on telecommunication, Defence and security, Education and Health Sector have made positive impact on Nigeria's economic growth. But transportation and agricultural expenditures have impacted negatively in the economic growth in Nigeria. The conclusion therefore is that the level of government expenditures for transportation and agricultural development is still not adequate to build the much need capacity in the sectors to impact positively to economic growth.

Agu, (2014) studied fiscal policy and economic growth in Nigeria: emphasis on various components of public expenditure. Findings reveal that total government expenditures have tended to increase with government revenue, with expenditures peaking faster than revenue. Investment expenditures were much lower than recurrent expenditures evidencing the poor growth in the country's economy. Hence there is some evidence of positive correlation between government expenditure on economic services and economic growth. An increase in budgetary allocation to economic services will lead to an enhancement in economic stability. Therefore, in public spending, it is important to note that the effectiveness of the private sector depends on the stability and predictability of the public incentive framework, which promotes or crowds in private investment.

Babalola and Aminu, (2012),in their research titled "Fiscal Policy and Economic Growth Relationship in Nigeria" revealed that productive expenditure positively impacted on economic growth during the period of coverage and a long-run relationship exists between them as confirmed by the cointegration test. The paper recommended improvement in government expenditure on health, education and economic services, as components of productive expenditure, to boost economic growth.

Gerson, (1998) studied the contributions of public expenditure to economic growth in Nigeria over the periods 1960 to 1992. The findings from the study provided support for fiscal policy-led growth through crowd-in private investment resulting from government expenditure on infrastructure.

Khosravi and Karimi (2010) analyzed the impact of government expenditure on economic growth in Nigeria over the period 1970 – 2008. The paper revealed that government total capital expenditure, total recurrent expenditures and expenditure on education have negative effect on economic growth while expenditures on health, transport and communication are growth enhancing.

Benos (2009) examined the effect of investment spending in education on economic growth in Nigeria using thirty-one (31) years' time series data from 1977 to 2007. The study employs cointegration and error correction techniques. The result shows positive and significant effect of educational expenditure on economic growth.

Abata, Kehinde and Borarinwa,(2012) examined Fiscal/Monetary Policy and Economic Growth in Nigeria: A Theoretical Exploration. The paper argues that curbing the fiscal indiscipline of Government will take much more than enshrining fiscal policy rules in our statute books. This is because the statute books are replete with dormant rules and regulation. It noted that there exist a mild long-run equilibrium relationship between economic growth and fiscal policy variables in Nigeria. The paper suggest that for any meaningful progress towards fiscal prudence on the part of Government to occur, some powerful pro-stability stakeholders strong enough to challenge government fiscal recklessness will need to emerge.

Omojolaibi and Egwaikhide (2013) in their paper titled: "A Panel Analysis of Oil Price Dynamics, Fiscal Stance and Macroeconomic Effects: The Case of Some Selected African Countries" adopted a panel vector autoregressive (PVAR) technique to examine the impact of oil price dynamics on the economic performance of five (5) oil exporting countries in Africa. The countries are: Algeria, Angola, Egypt, Libya and Nigeria. In order to achieve this, the study used the following variables: oil price volatility, real gross domestic product (real GDP), fiscal deficit, and gross investment and money supply shocks. The impulse response functions show that of all the macroeconomic variables considered, gross investment responds more to oil price volatility than fiscal deficit, real GDP and money supply. On the whole, the findings suggest that gross investment is the main channel through which oil price dynamics influenced the macroeconomic performance of these economies.

Nwoso &Okafor (2014) investigated government revenue and expenditure in Nigeria: a disaggregated analysis. The VAR results also show that total government expenditure, capital and recurrent expenditures have long run unidirectional relationships with total revenue, oil and non-oil revenue variables as well as unidirectional causalities running from expenditures to revenue variables. The findings support spend-tax hypothesis in Nigeria indicating that changes in government expenditure instigate changes in government revenue. The policy implication derivable from this study is that increase in government expenditure without a corresponding increase in revenue could widen the budget deficit. Therefore, government should explore other sources of revenue especially the non-oil minerals sector, and also reduce the size of large recurrent expenditure and move towards capital and other investment expenditures

Abdurrauf (2015) in his study, Fiscal Policy and Economic Development in Nigeria showed that government recurrent expenditure and government investment have significant positive impact on economic development in both the short and long run within the period under consideration. Capital expenditure appeared to have a short run positive impact but not in the long run. Tax revenue had an inverse significant impact in both short and long run. The speed of adjustment to equilibrium was found to be high.

Ugwuanya and Ugwunta (2017) investigated Fiscal Policy and Economic Growth: An Examination of Selected Countries in Sub-Saharan Africa. The sub-Saharan African countries studied include: Benin Republic, Botswana, Burkina Faso, Burundi, Cameroun, Cape Verde, Central African Republic, Equatorial Guinea, Liberia, Kenya, Lesotho, Madagascar, Malawi, Namibia, Nigeria, Seychelles, Sierra Leone, and South Africa. They were arrived at our sample using a combination of cluster and purposive sampling. The ex-post facto research design was adopted which enabled the study to make use of secondary data from sub-Saharan African Countries in a panel least squares. The result of the linearly modeled hypotheses tested using the panel data estimation technique under the fixed-effect assumptions revealed that Government productive and unproductive expenditures, distortionary tax (a proportional tax on output at rate) and non-distortionary taxes have significant effects on the economic growth of sub-Saharan African countries. Findings also revealed that budget balances of sub-Saharan African countries have a positive but insignificant effect on the economic growth of sub-Saharan African countries.

Obi (2007) in his study titled: “Fiscal policy and poverty alleviation: Some policy options for Nigeria” using static real-side computable general equilibrium model on Uganda concluded that a relationship exist between fiscal policy and poverty alleviation. The study observed that targeting of government expenditure seems to be the most potent tool for effective poverty reduction. But, tariff adjustment tends to aggravate income disparity/ poverty amongst households.

Havi,& Enu, (2014) in their study: “The Effect of Fiscal Policy and monetary Policy on Ghana’s Economic Growth: Which Policy Is More Potent? 1980-2012”, reveals that fiscal and, monetary policy affects economic growth positively. The study recommends that monetary policies implemented by the Bank of Ghana should promote favorable investment atmosphere through appropriate stabilization of interest rates, lending rates, inflationary rates, and exchange rates to promote and ensure economic growth, economic stability, economic sustainability and economic development in Ghana.

Enyim (2013) studied on government spending and poverty reduction in Nigerian's economic growth (1980-2009) using Ordinary Least Square method. The regression result shows that public spending has significant impact on Poverty reduction in Nigeria.

Farayibi & Owuru (2016) investigated the linkage between fiscal policy and poverty reduction in Nigeria using descriptive statistics. The study found that government capital and recurrent expenditures have not significantly reduced the levels of poverty in Nigeria because of a weak linkage, which has not allowed fiscal policy to reflect its true opportunity cost. The study therefore concludes that the level of government capital expenditures in Nigeria have weak impact on the level of poverty in the country over the period of time covered.

O'Nwachukwu (2017) examined the determinants of the rate of unemployment in Nigeria from 1980 to 2016 using dependent variable (Unemployment rate) and five explanatory variables (Government Expenditure, Inflation Rate, First Lag of Unemployment, Population and Real Gross Domestic Product). The study employed the Ordinary Least Squares (OLS) method to estimate the model after using the Augmented Dickey-Fuller to test for unit root. The result shows that Government Expenditure, Inflation Rate and Population are statistically significant in explaining changes in unemployment in Nigeria for the period under review. However, first lag of unemployment and Real Gross Domestic Product are found not to be statistically significant in explaining unemployment in Nigeria.

The study recommends increased allocation to capital expenditure in the budget, and monitoring awarded projects to ensure completion. The study also recommends that technologies which require human labor to operate be introduced.

Eze and Ogiji (2013) investigated the impact of fiscal policy on the manufacturing sector output in Nigeria using an error correction model. Empirical evidence from the developed and developing economies has shown that fiscal and monetary policies have the capacity to influence the entire economy if it is well managed. The results of the study indicate that government expenditure significantly affect manufacturing sector output based on the magnitude and the level of significance of the coefficient and p-value and there is a long-run relationship between fiscal policy and manufacturing sector output.

Singh, (2018) studied the impact of inflation on GDP and unemployment rate in India 2011-2018 using secondary data. The study reveals that inflation insignificantly influences GDP and unemployment and the correlation is negative. The correlation between unemployment and inflation is positive i.e. 0.477 and is insignificant at 10% level of significance. The correlation between GDP and unemployment rate has also been found insignificant with a value of 0.196. It is, therefore, concluded that inflation has a role which influential but for GDP and unemployment with insignificant levels in the macroeconomics factors of Indian economy.

Adewale(2018) in his study: An Empirical Analysis of Effectiveness of Monetary and Fiscal Policy Instruments in Stabilizing Economy: Evidence from Nigeria using the Error Correction Model (ECM) The results show that, there is long run equilibrium relationship between monetary and fiscal policy instruments and economic growth in Nigeria. The ECM has the expected negative sign and is between the accepted region of less than unity. This was confirmed by the positive relationship between money supply, government expenditure and revenue while interest rate and budget deficit have negative relationship with economic growth. The research therefore recommends that there should be effective use of money supply and government expenditure as key instruments of monetary and fiscal policy in Nigeria in order to improve the economy.

Egbunike, Emudainohwo, Gunardi, (2018), investigated Tax Revenue and Economic Growth: A Study of Nigeria and Ghana. The objective of the study was to examine the effect of tax revenue on economic growth of Nigeria and Ghana using multiple regressions as tools of analysis. The study reveals a positive impact of tax revenue on the gross domestic product of Nigeria and Ghana confirming prior studies. They recommend among others that adequate measure to ensure that revenue generated from the tax is effectively utilized to develop and grow the economy.

From the foregoing, we are able to at least establish that there exist a relationship between fiscal policy and economic growth. But on the direction and sign of the relations, it will suffice me to pronounce it yet inconclusive till we conclude the research.

2.4 Research Gap

The idiosyncratic evidence (inconsistent with theoretical expectation, returned from different investigations in different countries, it is evident that there is no agreement between the researchers on whether a relationship exist between fiscal policy and economic development. And where a relationship was found to exist, researchers failed to ascertain the direction of the relationship. This research will ascertain if fiscal policy has significant effect on economic growth, unemployment rate, poverty rate and human development index for Nigeria and Ghana. The research would determine if the effect of fiscal policy on economic development in Nigeria and Ghana exist in the short run or in the long run.

To lay credence to the above scenario, Chuku (2015), Omoniyi (2018), Farayibi & Owuru (2016), Eze & Ogiji (2013) and Adewale (2018) in measuring the effect of fiscal policy in Nigeria, did not include deficit financing in his model, which is an important instrument for fiscal policy. This research includes the following fiscal policy tools: Tax Revenue, Oil Revenue, Capital Expenditure, Recurrent Expenditure and Deficit Financing in order to close the gap. As these are the main components of fiscal policy, without capturing all these components in a single research on fiscal policy, there individual significance will not be captured. The inclusion of government deficit in the fiscal policy variables would help in determining if deficit financing (government borrowing) has a short run or a long run significant effect on Economic Growth, Human Development Index, Poverty Rate and Unemployment rates in Ghana and Nigeria.

Again, inability of the researchers to use the correct econometric methods in their regression analysis gave rise to this research. For example Babalola and Aminu (2012) in determining the effectiveness of fiscal policy in Nigeria, applied only simultaneous equation model, which did not subject the variables to stationarity test in order to avoid spurious result. This has resulted to unreliable results. In this research work, the stationarity unit root test showed that all the variables were stationary at first difference which is the reason for the Johansen cointegration test. As the Johansen test suggest that all the models have a long run effect, there was need to confirm the long run effect using the Error Correction Term/Speed of Adjustment of the Vector Error Correction model. This ensures the accuracy and reliability of the result. But many research works did not follow this.

In line with the above empirical reviews on subject matter, one can say with certainty that there is no one study on fiscal policy and economic development that has incorporated this level of disaggregated components of growth and development proxies in one single study.

This is yet another study gap that this study fills. This research work seeks to fill this gap in literature as it focuses on the effect fiscal policy on the Real Gross Domestic Product, Unemployment, Human Development, and Poverty Reduction in Nigeria and Ghana.

The conclusion is therefore trite that existing state of research shows some conceptual and statistical weaknesses providing further impetus for this study. It is very necessary to take cognizance of the above pitfalls in the present study. This is with the intention of making the right policy recommendations and taking the right policy decisions.

CHAPTER THREE

METHODOLOGY

3.0 Preamble

The primary objective of economic research is to arrive at a conjunction of economic theory and actual measurement using the theory and techniques of statically inference as the matching bridge (Ogiogio, 1996). This research work makes use of econometric method. Econometric methods are statistical methods specifically adapted to the peculiarities of economic phenomena (Zagler, 2003). The type of research to be carried out determines the choice of strategy/technique to be adopted. In this chapter the presentation of statistical methods used are clearly stated. It involves the use of appropriate statistical technique. This helped in drawing the inference and conclusion as part of the presentation which entails the description, explanation and advancement of justification for the method employed in data collection and analysis.

3.1 Research Design

Analytical was adopted in this research. The method is related to the study as it enables one to examine and appreciate how fiscal policy has affected economic development in Sub Sahara Africa. In the analytical method, the researcher examines the variations in the dependent variables as a result of changes in the explanatory variables for the time under review. The study uses time series data for the period 1986 to 2017. The collected data are analyzed using Vector auto-regressive (VAR) modeling technique and the error-correction model is generated after undergoing time series properties tests.

3.2 Sources and Methods of Data Collection

The research used data collected from secondary sources. Secondary data constitutes the main data needed for this research. The needed data were collected from Central Bank of Nigeria Statistical Bulletin, National Bureau of Statistics, Bank of Ghana Statistical Bulletin 2019, Ghana Statistical Services, International Monetary (IMF) Fund financial statistics Year Book and World Bank's African Database (CD – ROM). The data for Tax Revenue, Oil Revenue, Capital Expenditure, Recurrent Expenditure, Deficit Financing and Real Gross Domestic Product for Nigeria were collected from the Central Bank of Nigeria Statistical Bulletin 2019. The Unemployment rate, Human Development Index, Poverty rate for both Nigeria, Ghana and Sub Saharan Africa were collected from World Bank African Database 2020 and IMF Financial Statistical year book 2020. The data for Real Gross Domestic Product for Sub Saharan Africa were collected from the World Bank Africa Database and International Monetary Fund (IMF) Financial Statistics. The data for Tax Revenue, Oil Revenue, Capital/Development Expenditure, Recurrent Expenditure and Deficit Financing for Ghana were collected from the Bank of Ghana Statistical Bulletin 2019.

3.3 Validation and Reliability of Instrument

In order to avoid spurious regression figures that could produce inaccurate results, Philips-Perron Unit Root Test was employed. This tested the stationarity of the series. Its validity lies in its ability to overcome spuriousity. This is to avoid analyzing inconsistent and spurious relationships.

3.4 Model Specification

An economic method represents the basic features of economic phenomena. It is an abstraction of the reality. The specification of a model is based on the available information relevant to the study in question. This is to say, that the information of an economic model is dependent on the available information and other major empirical work or else the model will be non – theoretical. In line with the approach adopted by Gerson (1998), Fud,Taylor & Yucel, (2003), Fofack (2010), Eze & Ogiji (2013) in their works on fiscal policy and economic development using various inter-country data and in line with Wagner's theory that believes that a functional relationship exist between economic activities and government fiscal activities. This study shall build multiple regression models and make use of econometric procedure in estimating the relationship between fiscal policy and economic development in Sub Sahara Africa. Therefore, the functional forms of the models are specified as follows:

For NIGERIA:

$GDP_N = f(OREV_N, TAXREV_N, CEXP_N, REXP_N, DEF_N)$

A Priori + + + + +

$UNP_N = f(OREV_N, TAXREV_N, CEXP_N, REXP_N, DEF_N)$

A Priori - - - - -

$HDI_N = f(OREV_N, TAXREV_N, CEXP_N, REXP_N, DEF_N)$

A Priori + + + + +

$POV_N = f(OREV_N, TAXREV_N, CEXP_N, REXP_N, DEF_N)$

A Priori - - - - -

For Ghana:

$GDP_G = f(OREV_G, TAXREV_G, CEXP_G, REXP_G, DEF_G)$

A Priori + + + + +

$UNP_G = f(OREV_G, TAXREV_G, CEXP_G, REXP_G, DEF_G)$

A Priori- - - - -

$HDI_G = f(OREV_G, TAXREV_G, CEXP_G, REXP_G, DEF_G)$

A Priori + + + + +

$POV_G = f(OREV_G, TAXREV_G, CEXP_G, REXP_G, DEF_G)$

A Priori - - - - -

For Sub Saharan Africa:

$GDP_s = f(OREV_s, TAXREV_s, CEXP_s, REXP_s, DEF_s)$

A Priori + + + + +

$UNP_s = f(OREV_s, TAXREV_s, CEXP_s, REXP_s, DEF_s)$

A Priori - - - - -

$HDI_s = f(OREV_s, TAXREV_s, CEXP_s, REXP_s, DEF_s)$

A Priori + + + + +

$POV_s = f(OREV_s, TAXREV_s, CEXP_s, REXP_s, DEF_s)$

A Priori - - - - -

The data collected for this research were not in the same unit of measurement, so the log of their values was used for the analysis.

The econometric forms of these models are as follows (Nigeria):

$logGDPn = \beta_0 + \beta_1 logOREVn_t + \beta_2 logTAXREVn_t + \beta_3 logCEXPn_t + \beta_4 logREXPn_t + \beta_5 logDEFn_t + \mu_t$

$logUNPn = \beta_0 + \beta_1 logOREVn_t + \beta_2 logTAXREVn_t + \beta_3 logCEXPn_t + \beta_4 logREXPn_t + \beta_5 logDEFn_t + \mu_t$

$logHDIn = \beta_0 + \beta_1 logOREVn_t + \beta_2 logTAXREVn_t + \beta_3 logCEXPn_t + \beta_4 logREXPn_t + \beta_5 logDEFn_t + \mu_t$

$logPOVn = \beta_0 + \beta_1 logOREVn_t + \beta_2 logTAXREVn_t + \beta_3 logCEXPn_t + \beta_4 logREXPn_t + \beta_5 logDEFn_t + \mu_t$

Econometric Model For Ghana

$logGDPg = \beta_0 + \beta_1 logOREVg_t + \beta_2 logTAXREVg_t + \beta_3 logCEXPg_t + \beta_4 logREXPg_t + \beta_5 logDEFg_t + \mu_t$

$logUNPg = \beta_0 + \beta_1 logOREVg_t + \beta_2 logTAXREVg_t + \beta_3 logCEXPg_t + \beta_4 logREXPg_t + \beta_5 logDEFg_t + \mu_t$

$logHDIg = \beta_0 + \beta_1 logOREVg_t + \beta_2 logTAXREVg_t + \beta_3 logCEXPg_t + \beta_4 logREXPg_t + \beta_5 logDEFg_t + \mu_t$

$logPOVg = \beta_0 + \beta_1 logOREVg_t + \beta_2 logTAXREVg_t + \beta_3 logCEXPg_t + \beta_4 logREXPg_t + \beta_5 logDEFg_t + \mu_t$

The econometric model for Sub Saharan Africa

$logGDPs = \beta_0 + \beta_1 logOREVs_t + \beta_2 logTAXREVs_t + \beta_3 logCEXPs_t + \beta_4 logREXPs_t + \beta_5 logDEFs_t + \mu_t$

$logUNPs = \beta_0 + \beta_1 logOREVs_t + \beta_2 logTAXREVs_t + \beta_3 logCEXPs_t + \beta_4 logREXPs_t + \beta_5 logDEFs_t + \mu_t$

$logHDIs = \beta_0 + \beta_1 logOREVs_t + \beta_2 logTAXREVs_t + \beta_3 logCEXPs_t + \beta_4 logREXPs_t + \beta_5 logDEFs_t + \mu_t$

$logPOVs = \beta_0 + \beta_1 logOREVs_t + \beta_2 logTAXREVs_t + \beta_3 logCEXPs_t + \beta_4 logREXPs_t + \beta_5 logDEFs_t + \mu_t$

GDP= Gross Domestic Product

HDI= Human Development Index

POV= Poverty Index

UNP= Unemployment rate

OREV= Oil Revenue

TAXREV= Tax Revenue,

CEXP= Capital Expenditure,

REXP= Recurrent Expenditure,

DEF= Deficit Financing

Log= The logarithm values

g= Ghana

n= Nigeria

s= Sub Saharan Africa

B_0= constant

β_1-β_5= parameters to be estimated from the regression equation

μ_1= random error term.

3.5 Variables Definition And Data Requirement

In order to carry out this research, the following data needed are defined below:

3.5.1 GDP= Gross Domestic Product: GDP. Real GDPis commonly used to represent economic growth by most researchers. For the purpose of this study, the GDP for Ghana is presented as GDPgwhile GDP for Nigeria is presented as GDPn. the GDP data for both countries covered the period 1986 – 2017.

3.5.2 Unemployment Rate: UNP: This is the state of having no paid job to earn a living, for an educated & uneducated person. For the purpose of this research rate shall mean the measure of the prevalent rate of Youth unemployment. Youth unemployment is the situation of young people who are looking for a job, but cannot find a job, with the age range being that defined by the United Nations as 15–24 years old.For this research Youths Unemployment rate for Nigeria is presented as UNPn while Unemployment rate for Ghana is presented as UNPg and the data for both countries covered the period 1986-2017.

3.5.3 Poverty Index: POV: Poverty the state of one lacking the basic material possessions or money needed to sustain life.It includes the lack social, economic, and political elements of life. United Nations defined poverty as the inability of having choices and opportunities, a violation of human dignity. It is also lack of basic capacity to effectively participate in the society. The poor do not have the basic essential need of life: food, clothing and shelter. It means insecurity, powerlessness and exclusion of individuals, households and communities. The poor are susceptibility to violence;they live in marginal or fragile environments and do not have access to clean water and sanitation. For the purpose of this research, poverty Index means the number of people living below $1.9 per day. Poverty Index for this research is presented as **POVINn** for Nigeria and **POVINg**for Ghana and the datacovered the period 1986-2017.

3.5.4 Human Development Index: HDI: The Human Development Index (HDI) is a United Nations definition of life expectancy, access to education, and standard of living, used in ranking countries into four various tiers of human development. A country scores higher HDI when the lifespan is higher, there is high access to education, and the standard of living is high.For the purpose of this research, Human Development Index for Nigeria is expressed as HDIn and that of Ghana is presented as HDIg. HDI data available were collected for the period 1990 -2017.

3.5.5 Budget Deficit: DEF: This refers to the total government revenue less total expenditure. It measures that portion of expenditure which is financed through borrowing and by printing of notes and coins. It was measured by deducting total expenditure (re- current and capital) from total revenue (tax and non-tax). The Budget deficit for Nigeria is presented as DEFn while Budget Deficit for Ghana is presented as DEFg. The deficit budget required covered the period 1986-2017.

3.5.6 Tax Revenue: TAXREV: Tax Revenue for Nigeria is presented as TAXREVn while Tax Revenue for Ghana is presented as TAXREVg. The Tax Revenue data for both countries covered the period 1986-2017.

3.5.7 Oil Revenue: OREV: Oil Revenue for Nigeria is represented as OREVn while Oil Revenue for Ghana is represented as OREVg. Oil revenue data for both Ghana and Nigeria covered the period 1986-2017.

3.5.8 Government Capital Expenditure: CEXP: Capital expenditure is called development expenditure. They are payments for acquisition of fixed capital assets, stock, land or intangible assets. Capital expenditure refers to the expenditure which either creates an asset or causes a reduction in the liabilities of the government. A good example would be building of schools, hospitals or roads. Therefore, the CEXPn shall represent Government Capital Expenditure for Nigeria while CEXPg shall represent capital expenditure for Ghana. The government expenditure data for both countries shall cover the period 1986-2017.

3.5.8 Government Recurrent Expenditure: REXP: These areall payments other than for capital assets, including on goods and services, (wages and salaries, employer contributions), interest payments, subsidies and transfers. They are expenditures that neither create assets nor reduce liabilities. Recurrent expenditure refers to payments made by governments for all purposes except capital costs. For the purpose of this study, REXPn means Government recurrent Expenditure for Nigeria, while REXPg shall mean Government recurrent expenditure for Ghana and the data for both countries covered the period 1986-2017.

3.6 Method of Data Reliability Analysis

3.6.1 Unit Root Test

Time series analysis is central to empirical modeling of the effects of fiscal policy on economic development. The non-random behaviour of the time series data could hinder the usefulness of the standard econometrics methods if it were applied directly without considering time series properties of the data (Gujarati, 1995). To test for thestationarity of the variables used in the study, the formal statistical tests for the presence of a unit root were undertaken. The two main methods of conducting Unit root test are the Augmented Dickey-Fuller (ADF) and the Philips Perron (PP) tests as explained (Dickey & Fuller, 1979) and (Philips and Perron, 1988) respectively. This is due to the fact that, the data generating process is not an AR (1) process. For the purpose of this research, the Philips-Perron Test was adopted in testing the null hypothesis that the time series is integrated at order 1. Philips-Perron Unit root test is built on the Dickey-Fuller Test of the null hypothesis $p = 1$ in $\Delta y_t = (p-1)\ y_t\text{-}1 + u_t$ where Δ is the first difference operator. Like the augmented Dickey–Fuller test, the Phillips–Perron test addresses the issue that the process generating data for *yt* might have a higher order of autocorrelation than is admitted in test equation making yt – 1 endogenous thus invalidating the Augmented Dickey Fuller Test. the

Phillips–Perron test makes a non-parametric correction to the t-test statistic. The test is robust with respect to unspecified autocorrelation and heteroscedasticity in the disturbance process of the test equation. In this study, the Philips-Perron technique was adopted in testing for the presence of unit roots.

3.6.2 Cointegration Test

Cointegration refers to the existence of a long-run equilibrium relationship between variables. The idea of long-run equilibrium implies that two or more variables may wander away from each other in the short-run but move together in the long-run (Enders, 1995). The use of cointegration technique allowed the study to capture the equilibrium relationship between non-stationary series within a stationary model following Adam (1998). The idea of long-run equilibrium implies that two or more variables may wander away from each other in the short-run but move together in the long-run (Enders, 1995)

It permitted the combination of the long-run and short-run information in the same model and overcame the problem of losing information which could have occurred when attempting to address non stationary series through differencing (Adam, 1998). Cointegration technique made it possible to capture the information of non-stationary series without sacrificing the statistical validity of the estimated equation (Stock, 1994).

Two main tests for cointegration, namely Johansen cointegration test and the Granger two-step methods were used. Johansen"s methodology, which was expressed as a vector autoregression (VAR) of order is given by:

$Y_t = u + A_1 y_{t-1} + \ldots\ldots.. + A_p y_{t-p} + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots(3.04)$

Where y, is a *nx1* vector of innovations. This VAR can be re-written as

$$\Delta y_t = u + \prod y_{t-1} + \sum_{i=1}^{\rho-1} \tau_i \Delta y_{t-1} + \varepsilon_i \ldots\ldots\ldots\ldots\ldots\ldots(3.05)$$

Where;

$$\prod = \sum A_t - I \ldots\ldots\ldots(3.06)$$

and,

$$\tau_i = -\sum_{j=i+1}^{p} A_j \ldots\ldots\ldots(3.07)$$

If the coefficient Matrix ∏ reduced rank r < n, then them exist n x r matrices α and β each with rank *r*, such that ∏ = *αβ*and *β*y_t, is stationary. *r*is the number of cointegrating relationships. The elements *of α*are known as the adjustment parameters in the vector correction model, and each column of β is a cointegrating vector. It has been shown that for a given *r*, the maximum likelihood estimator of β defined the combination of y_{r-1}that yielded the *r* largest canonical correlations of Δy_t with Δy_{t-1} after correcting for lagged differences and deterministic variables (Johansen, 1995). Johansen proposed two different likelihood ratio tests of the significance of these canonical correlations and thereby the reduced rank of the ∏ matrix. The trace test and maximum Eigen value test are shown in equation (3.7.09) and (3.7.10), respectively.

$$J_{trace} = -T\sum_{i=r+1}^{p} \ln(1-\lambda') \ldots\ldots\ldots\ldots\ldots\ldots\ldots(3.08)$$

$$J_{max} = -T\ln(1-\lambda') \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(3.09)$$

Where T is the sample size and λ is the i^{th}largest canonical correlation. The trace test tested the null hypothesis of *r* cointegrating vectors against the alternative hypothesis of *n* cointegrating vectors. The maximum Eigen value test, on the other hand, tested the null hypothesis of *r* contegrating vectors against the alternative hypothesis of *r +1* cointegrating vectors.

The residual based cointegration test introduced by Engle and Granger (1987) by analogy of equation (3.10) involves testing the significance of the coefficient in the Ordinary Least Squares (OLS) regression of:

$\Delta u = \rho u_t + \varepsilon_t$……………………………………………………(3.10)

Where $u_t$is the residual. The test postulates that if the residuals from the OLS estimation of the non-stationary variables are stationary, then the series arc cointegrated. If the residuals exhibited a stationary trend. Instead, estimation could be done on the variables at their first difference. However, the long-run characteristics of the data would be lost. Therefore, the study used the Johansen cointegration method to test for the long-run relationship between the variables.

3.7 Estimation Techniques

3.7.1 Vector Error Correction Mechanism (VECM)

The estimation process encountered a challenge of determining what variable adequately captures fiscal policy stance so that it may be included in the empirical equation. The literature has demonstrated that no single variable appear to be the best variable to estimate in ascertaining the effect of fiscal policy on economic development. Therefore, following Fu-Taylor and Yucel (2003), Chuku (2015) and Zhattau (2013), the study Vector Error Correction Mechanism was used to determine the speed of a adjustment to the equilibrium ‘x’ or long run relation described by the cointegration relation.

The regression of Gross Domestic Product (GDP), Unemployment Rate (UNP), Human Development Index (HDI) and Poverty Index (POVIN) against fiscal policy variables will enable the study to get the effects of these variables on economic development in Sub Saharan African Countries. However, the study may not apply least squares method (OLS) directly sincenot all the models in this research will be estimated in the short run. There will be long run and short run estimation depending on the result of the error correction mechanism. Differencing the time series prior to estimating model will only describe the relationship between changes in variables and may disregarded the long-run relationship between and fiscal policy variables and economic development. ECM model in this study shall assume that the short-run effects occur when the economy is still in disequilibrium, and that the long-nm effect occurs when the economy moves to equilibrium (Enders, 1995). The long-run equations in 3.5 will be lagged one period to derive the error correction mechanism, which will be included in the error correction model. The coefficients in the ECM, describe the effect of a unit change of a given fiscal variable on economic development.

CHAPTER FOUR

RESULTS AND DISCUSSION

4.1. Data Presentation

This section presents the data collected for this research work. Tables 4.01, 4.02 and 4.03 presents the both the dependent and independent variables for Nigeria and Ghana.

Table 4.01: Table of dependent and Independent variables (Nigeria)

YEAR	TAXREVn (₦)	OREVn (₦)	CEXPn (₦)	REXPn (₦)	DEFn (₦)	UNPn (%)	POVINn (%)	HDIn (%)	GDPn (₦)
1986	4.49	8.11	8.53	7.7	-8.25	5.3	43.4	0	202.44
1987	6.35	19.03	6.37	15.65	-5.89	7	44.4	0	249.44
1988	7.77	19.83	8.34	19.41	-12.16	5.1	42.3	0	320.33
1989	14.74	39.13	15.03	25.99	-15.13	4.5	44.6	0	419.2
1990	26.22	71.89	24.05	36.22	-22.12	3.5	46.9	0	499.68
1991	18.33	82.67	28.34	38.24	-35.76	3.1	44.7	0	596.04
1992	26.38	164.08	39.76	53.03	-39.53	3.5	57.1	0	909.8
1993	30.67	162.1	54.5	136.73	-65.16	3.4	56.6	0	1259.07
1994	41.72	160.19	70.92	89.97	-70.27	3.2	54.3	0	1762.81
1995	135.44	324.55	121.14	127.63	0	1.9	65.6	0	2895.2
1996	114.81	408.78	212.93	124.24	0	2.8	63.5	0	3779.13
1997	166	416.81	269.65	158.56	-5	3.4	55.5	0	4111.64
1998	139.3	324.31	309.02	178.1	-133.39	3.5	53.1	0	4588.99
1999	224.77	724.42	498.03	449.66	-285.1	17.5	50.6	0.456	5307.36
2000	314.48	1591.68	239.45	461.6	-103.78	13.1	40.6	0.439	6897.48
2001	903.46	1707.56	438.7	579.3	-221.05	13.6	34.6	0.455	8134.14
2002	500.99	1230.85	321.38	696.8	-301.4	12.6	50.6	0.466	11332.25
2003	500.82	2074.28	241.69	984.3	-202.72	14.8	53.5	0.443	13301.56
2004	565.7	3354.8	351.3	1032.7	-172.6	13.4	54.4	0.462	17321.3
2005	785.1	4762.4	519.5	1223.7	-161.4	11.9	53.4	0.465	22269.98
2006	677.54	5287.57	552.39	1290.2	-101.4	12.3	53.5	0.475	28662.47
2007	1264.6	4462.91	759.32	1589.27	-117.24	12.7	53.6	0.479	32995.38
2008	1336	6530.6	960.89	2117.36	-47.38	14.9	54.1	0.485	39157.88
2009	1652.65	3191.94	1152.8	2127.97	-810,01	19.7	53.5	0.49	44285.56
2010	1907.58	5396.09	883.87	3109.38	-1105.4	5.1	54.2	0.484	54612.26
2011	2237.88	8878.97	918.55	3314.51	-1158.52	6	44.6	0.494	62980.4
2012	2628.78	8025.97	874.83	3325.16	-975.78	10.6	43.5	0.512	71713.94
2013	2950.56	6809.23	1108.39	3689.06	-1153.49	10	44.4	0.519	80092.56
2014	3275.03	6793.82	783.12	3426.9	-835.68	7.8	42.1	0.524	89043.62
2015	3082.41	3830.1	818.37	3831.95	-1557.79	9	42.4	0.527	94144.96

2016	2985.13	2693.91	634.8	5762.7	-2208.22	13.4	46.7	0.53	101489.49
2017	3207.9	4109.8	979.5	7138.9	-3679.5	17.5	48.7	0.532	113711.63

Source: CBN Statistical Bulletin 2018, National Bureau of Statistics, International Monetary (IMF) Fund financial statistics Year Book and World Bank's African Database

KEY: Tax Revenue =TAXREVg (N);, Oil Revenue = OREVg (N);, Capital Expenditure =CEXPg (N); Recurrent Expenditure =REXPg (N);, Deficit Financing ;DEFg (N); Unemployment =UNPg (%); Poverty Index ;POVg (%); Human Development Index =HDIg (%); and Gross Domestic Product =GDPg (N)

TABLE 4.02: The table of Dependent and Independent Variables (Ghana)

YEAR	TAXREVg (GH₵)	OREVg (GH₵)	CEXPg (GH₵)	REXPg (GH₵)	DEFg (GH₵)	POVg (%)	UNPg (%)	HDIg (%)	GDPg (GH₵)
1986	10.3	0	17.1	82.9	-224	39.95	7.00	0	5.73
1987	9.2	0	21.9	78.1	-130	39.9	6.20	0	5.07
1988	8.8	0	23.9	76.1	-149	39.74	5.50	0	5.2
1989	8.7	0	22.5	77.5	-111	39.6	5.30	0	5.89
1990	7.6	0	21.9	78.1	-307	40.5	5.60	0.455	6.6
1991	7.8	0	22.4	77.6	-272	47.38	4.64	0.445	6.41
1992	6.1	0	21.6	78.4	-801	46.5	4.7	0.465	5.97
1993	8.8	0	17.1	82.9	-786	44.7	5.28	0.485	5.44
1994	11.2	0	18.8	81.2	-670	43	5.85	0.435	6.47
1995	11.3	0	25.8	74.2	-709	42	6.47	0.421	6.93
1996	11.4	0	27.1	72.9	-936	42.1	7.08	0.453	6.89
1997	9.5	0	19.6	70.6	-1045	36.2	7.6	0.431	7.48
1998	9.9	0	21.3	67.9	-978	34.7	8.2	0.486	7.72
1999	9	0	22.3	66.8	-1079	32.4	10.1	0.492	4.98
2000	11	0	17.4	54.8	-492	30.6	10.36	0.516	5.31
2001	12.3	0	14.7	56.9	-478	28.81	9.29	0.518	6.16
2002	11.4	0	11.8	40.8	-416	26.9	8.58	0.518	7.63
2003	13.7	0	18.7	34.9	-375	26.6	7.57	0.516	8.88
2004	13.2	0	10.8	24.6	-441	26.12	6.47	0.516	10.73
2005	14	0	11.8	20.4	-494	25.19	5.54	0.509	9.87
2006	14	0	9.8	17.9	-961	25.19	4.64	0.519	20.41
2007	13.6	0	8.7	13.9	-1791	25.8	4.57	0.53	24.76
2008	13.2	0	9.1	14.8	-2281	29.6	4.66	0.542	28.53
2009	12.5	0	7.1	13.3	-1845	29.8	5.17	0.547	28.54
2010	13.8	0	6.3	16.1	-3234	28.1	5.32	0.554	32.17
2011	14.9	2925	6.5	15.1	-2949	26.8	5.91	0.563	39.57
2012	15.6	3300	7.3	15.6	-4732	25.1	6.01	0.57	41.94
2013	16.4	3300	7	16.1	-5738	27.2	6.43	0.577	63.28
2014	16.7	3300	6.9	15.9	-4240	29.1	6.48	0.576	53.17
2015	17.2	3300	22.8	14.3	-1981	29.6	6.81	0.585	48.6
2016	17.6	2775	20.5	13.8	-3788	21.9	6.77	0.588	54.99
2017	22.3	2437.5	22.7	11	-2396	21.4	6.63	0.592	58.98

Source: Bank of Ghana, Ghana Statistical Services, International Monetary (IMF) Fund financial statistics Year Book and World Bank's African DatabaseKEY: Tax Revenue =TAXREVg;, Oil Revenue = OREVg;, Capital Expenditure =CEXPg; Recurrent Expenditure =REXPg;, Deficit Financing ;DEFg; Unemployment =UNPg; Poverty Index ;POVg; Human Development Index =HDIg; and Gross Domestic Product =GDPg

TABLE 4.03: The table of Dependent and Independent Variables (Sub Saharan Africa)

YEAR	TAXREVs (US $)	OREVs (US $)	CEXPs (US $)	REXPs (US $)	DEFs (US $)	GDPs (US $)	HDIs (%)	POVs (%)	UNPs (%)
1986	7.395	4.055	12.815	45.3	-116.125	257.561	0.33	34.7	10.76
1987	7.775	9.515	14.135	46.875	-67.945	294.637	0.33	35.3	10.99
1988	8.285	9.915	16.12	47.755	-80.58	303.521	0.33	40.06	11.13
1989	11.72	19.565	18.765	51.745	-63.065	301.769	0.33	48.56	11.55
1990	16.91	35.945	22.975	57.16	-164.56	337.823	0.33	55.7	11.00
1991	13.065	41.335	25.37	57.92	-153.88	342.831	0.34	57.4	11.88
1992	16.24	82.04	30.68	65.715	-420.265	338.104	0.34	59.4	11.99
1993	19.735	81.05	35.8	109.815	-425.58	315.396	0.34	60.60	12.14
1994	26.46	80.095	44.86	85.585	-370.135	310.732	0.34	61.30	12.15
1995	73.37	162.275	73.47	100.915	-354.5	356.312	0.35	60.90	12.14
1996	63.105	204.39	120.015	98.57	-468	368.12	0.35	59.80	12.20
1997	87.75	208.405	144.625	114.58	-525	382.774	0.37	59.30	12.24
1998	74.6	162.155	165.16	123	-555.695	369.368	0.37	59.50	12.23
1999	116.885	362.21	260.165	258.23	-682.05	372.512	0.38	59.40	12.40
2000	162.74	795.84	128.425	258.2	-297.89	396.946	0.39	58.90	12.33
2001	457.88	853.78	226.7	318.1	-349.525	378.522	0.39	57.50	12.44
2002	256.195	615.425	166.59	368.8	-358.7	412.652	0.41	56.40	12.77
2003	257.26	1037.14	130.195	509.6	-288.86	517.373	0.41	56.40	12.83
2004	289.45	1677.4	181.05	528.65	-306.8	644.839	0.43	53.50	12.27
2005	399.55	2381.2	265.65	622.05	-327.7	765.183	0.44	52.00	12.05
2006	345.77	2643.785	281.095	654.05	-531.2	909.663	0.44	50.80	11.70
2007	639.1	2231.455	384.01	801.585	-954.12	1057	0.45	50.00	11.30
2008	674.6	3265.3	484.995	1066.08	-1164.19	1212	0.46	49.00	10.65
2009	832.575	1595.95	579.95	1070.635	-1845	1151	0.47	48.90	11.11
2010	960.69	2698.045	445.085	1562.74	-2169.7	1371	0.47	47.50	11.98
2011	1126.39	5901.985	462.525	1664.805	-2053.76	1553	0.48	45.30	11.77
2012	1322.19	5662.985	441.065	1670.38	-2853.89	1641	0.48	43.70	11.70
2013	1483.48	5054.615	557.695	1852.58	-3445.75	1748	0.49	43.20	11.47
2014	1645.865	5046.91	395.01	1721.4	-2537.84	1831	0.49	42.10	10.99
2015	1549.805	3565.05	420.585	1923.125	-1769.4	1664	0.50	41.80	10.91
2016	1501.365	2734.455	327.65	2888.25	-2998.11	1557	0.50	41.7	11.68
2017	1615.1	3273.65	501.1	3574.95	-3037.75	1691	0.50	41.00	11.74

Source: International Monetary (IMF) Fund financial statistics Year Book and World Bank's African Database

KEY: Tax Revenue =TAXREVs;, Oil Revenue = OREVs;, Capital Expenditure =CEXPs; Recurrent Expenditure =REXPs;, Deficit Financing ;DEFs; Unemployment =UNPs; Poverty Index ;POVs; Human Development Index =HDIs; and Gross Domestic Product =GDPs

4.1.1 Data Estimation

4.1.2 Unit Root Test

To address the issue of spurious regression results usually associated with non-stationary time series data, the research carried out Philips-Perron test and the results are summarized in Tables 4.04, 4.05 and 4.06.

Table 4.04: Summary of Philips-Perron Unit Root Test (Nigeria)

Variables	Philips-perrontest statistics (prob.)	Critical values @ 5%	Order of integration
CEXPn	--7.375046 (0.0000)	-2.963972	Stationary at first difference
DEFn	-7.514173 (0.0000)	-2.963972	Stationary @ first difference
GDPn	-8.915169 (0.0000)	-2.963972	Stationary @ first difference
HDIn	-5.306944 (0.0001)	-2.963972	Stationary at first difference
OREVn	-5.813461 (0.0000)	-2.963972	Stationary at first difference
POVn	-5.288907 (0.0002)	-2.963972	Stationary at first difference
REXPn	-7.552258 (0.0000)	-2.967767	Stationary @ first difference
TAXREVn	-5.492292 (0.0001)	-2.963972	Stationary at first difference
UNPn	-7.294710 (0.0000)	-2.963972	Stationary at first difference

Source: Researchers computation using E-View version 10.

The results of the Philips-Perron Unit root test as shown in Table 4.04 show that all the variables: Capital Expenditure (CEXPn), Human Development Index (HDIn), Oil Revenue (OREVn), Poverty Index (POVn), Tax Revenue (TAXREVn), Unemployment rate (UNPn), Deficit Financing (DEFn), Gross Domestic Product (GDPn) and Recurrent Expenditure (REXPn) for Nigeria are stationary at first difference. The research therefore rejects the null hypothesis, and concludes that there is no unit root in the variables.

Table 4.05: Summary of Philips-Perron Unit Root Test (Ghana)

Variables	Philips-perron test statistics (prob.)	Critical values @ 5%	Order of integration
CEXPg	-6.490875 (0.0000)	-2.963972	Stationary at first difference
DEFg	-6.285606 (0.0000)	-2.963972	Stationary at first difference
GDPg	-6.107638 (0.0000)	2.963972	Stationary at first difference
HDIg	-5.455940 (0.0001)	-2.963972	Stationary at first difference
OREVg	-4.644390 (0.0008)	-2.963972	Stationary at first difference
POVg	-4.524522 (0.0012)	-2.963972	Stationary at first difference
REXPg	5.110498 (0.0002)	-2.963972	Stationary at first difference
TAXREVg	-4.544339 (0.0011)	-2.963972	Stationary at first difference
UNPg	-6.450291 (0.0000)	-2.963972	Stationary at first difference

Source: Researchers computation using E-View version 10

The results of the Philips-Perron Unit root test as shown in table 4.05 show that Capital Expenditure (CEXPg), Human Development Index (HDIg), Oil Revenue (OREVg), Poverty Index (POVg), Tax Revenue (TAXREVg) and Unemployment rate (UNPg), Deficit Financing (DEFg), Gross Domestic Product (GDPg) and Recurrent Expenditure (REXPg) for Ghana are stationary at first difference. The research therefore rejects the null hypothesis, and concludes that there is no unit root in the variables.

Table 4.06: Summary of Philips-Perron Unit Root Test (Sub Saharan Africa)

Variables	Philips-perrontest statistics (prob.)	Critical values @ 5%	Order of integration
CEXPs	-7.531156 (0.0000)	-2.9633972	Stationary at first difference
DEFs	-5.67096 (0.0001)	-2.963972	Stationary @ first difference
GDPs	-3.533157 (0.0139)	-2.963972	Stationary @ first difference
HDIs	-5.581099 (0.0001)	-2.963972	Stationary at first difference
OREVs	-5.212742 (0.0002)	-2.963972	Stationary at first difference
POVs	-5.743116 (0.000)	-2.963972	Stationary at first difference
REXPs	-3.657253 (0.0415)	-3.568379	Stationary @ first difference
TAXREVs	-5.492278 (0.0001)	-2.963972	Stationary at first difference
UNPs	-3.644108 (0.0107)	-2.963972	Stationary at first difference

Source: Researchers computation using E-View version 10

The result of the Philips-Perron Unit Root Test presented in table 4.06 shows that all the variables: Capital Expenditure (CEXPs), Human Development Index (HDIs), Oil Revenue (OREVs), Poverty Index (POVs), Tax Revenue (TAXREVs) and Unemployment rate (UNPs), Deficit Financing (DEFs), Gross Domestic Product (GDPs) and Recurrent Expenditure (REXPs) for Sub Saharan Africa are stationary at first difference. So, there is no unit root in the variables.

4.1.3 Cointegration Test Results

This section presents the results of the Johansen Cointegration test conducted to determine if a short run or long run relationship exist between the dependent variable and the explanatory variables.

TABLE 4.07Johansen Cointegration Result (Nigeria). Dependent Variable: Poverty (POVIN)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.906087	142.9331	69.81889	0.0000
At most 1 *	0.770125	79.06765	47.85613	0.0000
At most 2 *	0.586985	39.37175	29.79707	0.0029
At most 3 *	0.331861	15.49643	15.49471	0.0500
At most 4 *	0.156910	4.608418	3.841466	0.0318

Source: Researchers computation using E-View version 10

The result in Table 4.07 shows the existence of 5 cointegrating equations at 5% level of significance which suggests that a long run relationship exist between fiscal policy variables (Tax Revenue, Oil Revenue, Capital Expenditure, Recurrent Expenditure and Deficit Financing) and Poverty in Nigeria. This conforms to the a priori expectation that a long run relationship exist between fiscal policy and poverty in Nigeria.

TABLE 4.08:Johansen Cointegration Result (Ghana). Dependent Variable: Poverty

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.739741	102.9384	69.81889	0.0000
At most 1 *	0.699590	62.55612	47.85613	0.0012
At most 2	0.396074	26.47787	29.79707	0.1151
At most 3	0.267935	11.34874	15.49471	0.1909
At most 4	0.064249	1.992172	3.841466	0.1581

Source: Researchers computation using E-View version 10

The result of the cointegration test as shown in Table 4.08 indicates that there are at most two cointegrating equations in the model at 5% significance level. Research therefore, suggests that a long run relationship exist between fiscal policy and poverty in Ghana. This is in line with the a priori expectation that a long run relationship exist between fiscal policy and poverty in Ghana.

Table 4.09 Johansen Cointegration Result: Nigeria. Dependent variable: Unemployment (UNP)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.890103	149.6706	69.81889	0.0000
At most 1 *	0.874456	90.04883	47.85613	0.0000
At most 2 *	0.521404	34.02112	29.79707	0.0154
At most 3	0.381306	14.12484	15.49471	0.0796
At most 4	0.042086	1.160940	3.841466	0.2813

Source: Researchers computation using E-View version 10

The result in Table 4.09 shows the existence of 3 cointegrating equations at 5% level of significance which suggest that a long run relationship exist between fiscal policy variables (Tax Revenue, Oil Revenue, Capital Expenditure, Recurrent Expenditure and Deficit Financing) and unemployment in Nigeria. It is in line with the a priori expectation that a long run relationship exist between fiscal policy and unemployment in Nigeria.

Table 4.10: Johansen Cointegration Result:Dependent Variable: Unemployment (GHANA)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.800375	100.7677	69.81889	0.0000
At most 1 *	0.650640	52.42830	47.85613	0.0175
At most 2	0.429366	20.87873	29.79707	0.3652
At most 3	0.105206	4.048484	15.49471	0.8996
At most 4	0.023507	0.713625	3.841466	0.3982

Source: Researchers computation using E-View version 10

The result in Table 4.10 shows that there are at most 2 (two) cointegrating equations in the model at 5% level of significance. The result shows that there is a long run relationship between fiscal policy and Unemployment in Ghana.

Table 4.11 Johansen Cointegration Results: Nigeria. Dependent variable: Human Development Index (HDI)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.940839	171.3325	69.81889	0.0000
At most 1 *	0.873246	94.99012	47.85613	0.0000
At most 2 *	0.637309	39.22134	29.79707	0.0031
At most 3	0.299344	11.83787	15.49471	0.1649
At most 4	0.079374	2.232936	3.841466	0.1351

Source: Researchers computation using E-View version 10

Comparing the Trace Statistic and the critical values at 5% level of significance on table 4.11, the result suggests the existence of at most 3 (three) cointegrating equations. So, a long run relationship exists between fiscal policy variables (Tax Revenue, Oil Revenue, Capital Expenditure, Recurrent Expenditure and Deficit Financing) and Human Development in Nigeria. This conforms to the a priori expectation and suggeststhat a long run relationship exist between fiscal policy and human development in Nigeria.

TABLE 4.12: Johansen Cointegration Result (Ghana)

Dependent Variable: Human Development Index (HDI)				
Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.701966	84.67128	69.81889	0.0021
At most 1 *	0.617972	48.35486	47.85613	0.0448
At most 2	0.397084	19.48701	29.79707	0.4583
At most 3	0.121166	4.307669	15.49471	0.8772
At most 4	0.014327	0.432904	3.841466	0.5106

Source: Researchers computation using E-View version 10

The Johansen cointegration result as shown in Table 4.12 shows that there are at most 2 (two) cointegrating equations in the model. The result suggests that a long run relationship exist between fiscal policy and Human Development Index in Ghana. This is in line with the a priori expectation that a long time relationship exist between fiscal policy and human development in Ghana.

Table 4.13: Johansen Cointegration Result (Nigeria): Dependent variable: Gross Domestic Product (GDP)

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.886173	126.7681	69.81889	0.0000
At most 1 *	0.748855	68.09520	47.85613	0.0002
At most 2 *	0.380587	30.78863	29.79707	0.0383
At most 3 *	0.287666	17.85611	15.49471	0.0216
At most 4 *	0.275395	8.697464	3.841466	0.0032

Source: Researchers computation using E-View version 10

Comparing the Trace Statistic and the critical values at 5% level of significance on Table 4.13, the result confirms the existence of at most 5 (five) cointegrating equations. This suggests the existence of a long run relationship between fiscal policy variables (Tax Revenue, Oil Revenue, Capital Expenditure, Recurrent Expenditure and Deficit Financing) and economic growth in Nigeria in line with the a priori expectation.

Table 4.14: Johansen Cointegration Result: Dependent Variable: Gross Domestic Product (GDP) Ghana:

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**	
None *	0.820025	119.5203	69.81889	0.0000	
At most 1 *	0.699954	68.07215	47.85613	0.0002	
At most 2 *	0.438375	31.95758	29.79707	0.0278	
At most 3	0.385445	14.64995	15.49471	0.0668	
At most 4	0.001473	0.044223	3.841466	0.8334	

Source: Researchers computation using E-View version 10

Comparing the trace statistics and the 5% Critical values in Table 4.14, the result shows that there are at most 3 (three) cointegrating equations in the model. The result suggests that a long-run relationship exists between fiscal policy and economic growth in Ghana in line with the a priori expectation.

Table 4.15: Johansen Cointegration Result: Dependent Variable: Gross Domestic Product (GDP) Sub Saharan Africa

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.770675	122.4289	69.81889	0.0000
At most 1 *	0.663701	78.25052	47.85613	0.0000
At most 2 *	0.595218	45.55790	29.79707	0.0004
At most 3 *	0.437183	18.42573	15.49471	0.0176
At most 4	0.038625	1.181716	3.841466	0.2770

Source: Researchers computation using E-View version 10

Comparing the values of the Trace statistics and the 5% Critical Values in table 4.15, the research reveals that there are at most 4 (four) cointegrating equations in the model of the relationship between Fiscal Policy and Economic Growth in Sub Saharan Africa. This suggest that a long run relationship exist between Fiscal Policy and Economic Growth in Sub Saharan Africa.

Table 4.16: Johansen Cointegration Result: Dependent Variable: Human Development Index (HDIs) Sub Saharan Africa

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.810223	123.0403	69.81889	0.0000
At most 1 *	0.710063	73.18318	47.85613	0.0000
At most 2 *	0.505626	36.04044	29.79707	0.0084
At most 3	0.352836	14.90656	15.49471	0.0612
At most 4	0.059863	1.851890	3.841466	0.1736

Source: Researchers computation using E-View version 10

The Johansen Cointegration result in table 4.16 shows that there are at most 3 (three) cointegrating equations in the model that explains the relationship between Fiscal Policy and Human Development Index in Sub Saharan Africa. This also suggests that a long run relationship exist between Fiscal Policy and Human Development Index in Sub Saharan Africa.

Table 4.17: Johansen Cointegration Result: Dependent Variable: Unemployment Rate (UNPs) Sub Saharan Africa

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.808175	117.3113	69.81889	0.0000
At most 1 *	0.682506	67.77618	47.85613	0.0003
At most 2 *	0.491763	33.35733	29.79707	0.0187
At most 3	0.327755	13.05309	15.49471	0.1129
At most 4	0.037258	1.139107	3.841466	0.2858

Source: Researchers computation using E-View version 10

The Johansen Cointegration Test Result in table 4.17 shows that there are at most 3 (three) Cointegrating equations in the model. This suggests that there is a long run relationship existing between Fiscal Policy and Unemployment rate in Sub Saharan Africa.

Table 4.18: Johansen Cointegration Result: Dependent Variable: Poverty Rate (POVs) Sub Saharan Africa.

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**	
None *	0.809482	122.1009	69.81889	0.0000	
At most 1 *	0.714525	72.36059	47.85613	0.0001	
At most 2 *	0.514025	34.75260	29.79707	0.0124	
At most 3	0.332463	13.10468	15.49471	0.1110	
At most 4	0.032135	0.979876	3.841466	0.3222	

Source: Researchers computation using E-View version 10

The result in table 4.18 shows that there are at most 3 (three) cointegrating equations in the model that explains the relationship between fiscal policy and Poverty reduction in Sub Saharan Africa. The existence of at most 3 cointegrating equations in the model suggests that a long run relationship exists between Fiscal Policy and Poverty reduction in Sub Saharan Africa.

4.1.4 Results of the Vector Error Correction Model

This section presents the long run equations from the results of the Vector Error Correction Mechanism. The results of the Johansen Cointegration test in Tables 4.07 to 4.18 suggest that a long run relationship exist between fiscal policy and economic development in Sub Saharan Africa. So to estimate the long run equations and the speed of adjustment from short run dynamics to their long run static disposition, and to confirm the long run relationship, the Vector Error Correction Mechanism is adopted. Tables4.19 and 4.20 show the summary of the coefficients of the long run relationship obtained from the Vector Error Correction Model.

Table 4.19: Summary of Vector Error Correction Model Results (Nigeria and Ghana)

	Poverty		**Unemployment**		**HDI**		**GDP**	
	Nig.	**Ghana**	**Nig.**	**Ghana**	**Nig**	**Ghana**	**Nig**	**Ghana**
Variables	**Coef. (t.stat)**	**Coef. (t.stat)**	**Coef. (t.stat)**	**Coef. (t.stat)**	**Coef. (t.stat)**	**Coef. (t.stat)**	**Coef. (t.stat)**	**Coef. (t.stat)**
Speed of adj.	**+0.1796 (short run) Without lag**	**-0.0886 (long run)**	**-0.0146 (long run)**	**-0.0388 (long run)**	**+0.0629 (short run) Without lag**	**-0.06037 (long run)**	**-0.2687 (long run)**	**-0.55703 (long run)**
POV$_{t-1}$		-0.0886 (-0.723)						
UNP$_{t-1}$			-0.01457 (-0.106)	**-0.0388 (-0.599)**				
HDI$_{t-1}$						-0.0604 (-0.7801)		
GDP$_{t-1}$							**-0.2687 (-3.612)**	**-0.55703 (-2.690)**
TAXREV$_{t-1}$	**-0.0105 (-2.802)**	**-0.2147 (-4.859)**	**2.8378 (0.528)**	**-0.242 (-1.595)**	**-3.39E-05 (-0.399)**	**-1.543 (-1.239)**	**0.0035 (0.1768)**	**0.08311 (1.24395)**
OREV$_{t-1}$	**-0.0009 (0.4532)**	**-1.2932 (-0.0439)**	**69.617 (2.5514)**	**64.411 (1.073)**	**1.03E-05 (0.3826)**	-128.33 (-0.2596)	**-0.2708 (-4.358)**	46.1027 (1.5799)
CEXP$_{t-1}$	0.01168 (1.1224)	**0.28755 (1.4506)**	**6.1891 (1.439)**	-0.1729 (-2.483)	**0.00042 (1.9207)**	**-3.874 (-1.366)**	**-0.0151 (-1.352)**	**0.7619 (7.297)**
REXP$_{t-1}$	0.00826 (1.8277)	**-0.83323 (-5.2547)**	**7.5922 (0.801)**	-1.9366 (-6.086)	**7.51E-05 (0.7314)**	**10.2918 (3.1113)**	**-0.0149 (-0.513)**	**0.4746 (2.2296)**
DEF$_{t-1}$	0.00944 (1.342)	2.1918 (0.0624)	-8.9951 (-1.21)	-53.863 (-0.597)	9.57E-05 (0.599)	**-1480.22 (-2.7089)**	**-0.0149 (-0.713)**	**75.184 (1.879)**
F-Stat (Prob.)	2.1857 (0.0879)	1.4773 (0.2243)	1.0689 (0.4292)	2.7979 (0.0280)	12.392 (0.00000)	**0.38471 (0.91677)**	**71.1303 (0.0000)**	**3.5807 (0.00839)**

Source: Researchers computation using E-View version 10

Table 4.20: Summary of Vector Error Correction Model Results (Sub Saharan Africa)

Variables	Poverty	Unemployment	HDI	GDP
	Coef. (t.stat)	Coef. (t.stat)	Coef. (t.stat)	Coef. (t.stat)
Speed of adj.	-0.696828 (Long run)	-0.356509 (long run)	-0.129095 (Long run)	-0.311339 (Long Run)
POV_{t-1}	-0.696828 (-5.54162)			
UNP_{t-1}		-0.356509 (-1.97569)		
HDI_{t-1}			-0.129095 (-1.44601)	
GDP_{t-1}				-0.311339 (-1.53053)
$TAXREV_{t-1}$	0.121372 (0.05968)	42.49545 (2.21315)	81.84656 (2.75329)	-0.290101 (-1.57321)
$OREV_{t-1}$	3.879951 (0.15531)	308.8439 (1.24954)	552.4408 (1.42339)	-1.197387 (-0.53337)
$CEXP_{t-1}$	3.744330 (1.05662)	-25.72808 (-0.92605)	-27.08633 (-0.43202)	-0.098887 (-0.32781)
$REXP_{t-1}$	-5.259424 (-0.99698)	-82.45367 (-2.0626)	162.9097 (2.12781)	1.031503 (3.13299)
DEF_{t-1}	7.723836 (0.45356)	476.6917 (6.8473)	93.84876 (0.33584)	-2.577332 (-2.62174)
F-Stat (Prob.)	3.613654 (0.012605)	2.381202 (0.061927)	0.218103 (0.996838)	10.78282 (0.000087)

Source: Researchers computation using E-View version 10

Fiscal Policy and Poverty Reduction In Nigeria

The speed of adjustment of the Vector error correction mechanism has a positive coefficient. So, the short run equation is estimated. The regression equation and the short model that explains the short run relationship between fiscal policy and poverty reduction in Nigeria is shown in equation 4.01:

$$POVNn_t=49.682-0.01046TAXREVn_t-0.000901OREVn_t+0.0117CEXPn_t+0.0083REXPn_t+0.00944DEFn_t \ldots\ldots\ldots 4.01$$

From the equation 4.01, a unit change in Tax revenue in the short run is associated with a 1.01% reduction in poverty on average ceteris paribus in the short run. This is statistically significant at 5% level of significance. On the other hand, a unit change in Oil Revenue is associated with a 0.0009 unit change in poverty on average ceteris paribus in the short run, but not statistically significant at 5% level of significance. A unit change in Capital Expenditure in Nigeria is associated with a 1.2% change in poverty on average ceteris paribus in the short run, but not statistically significant at 5% level of significance. A unit change in Recurrent Expenditure is associated with a 0.8% change in poverty on average ceteris paribus in the short run, but not statistically significant at 5% level of significance. While a unit change in Deficit Financing is associated with a 0.9% change in poverty, but not statistically significant at 5% significance level.

Fiscal Policy and Poverty Reduction in Ghana

The error correction model that explains the long run relationship between fiscal policy and poverty reduction in Ghana is expressed in the equation:

$$\Delta POVg_t = -0.886POVg_{t-1} - 0.2147TAXREVg_{t-1} - 1.2932OREVg_{t-1} + 0.2876CEXPg_{t-1} - 0.8332REXPg_{t-1} + 2.1918DEFg_{t-1} + 28.732 \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots. 4.02$$

From equation 4.02, a unit change in Tax Revenue is associated with a 0.214 unit change in poverty level on average ceteris paribus in the long run in Ghana. A unit change in Oil Revenue is associated with a 1.293 unit change in Poverty on average ceteris paribus in Ghana in the long run. In the long run, a unit change in Capital Expenditure in Ghana is associated with a 0.288 unit change in Poverty on average ceteris paribus. Also, a unit change in Recurrent Expenditure in Ghana is associated with a 0.833unit change in the level of Poverty in Ghana on average ceteris paribus in the long run. While a unit change in Deficit Financing in Ghana is associated with a 2.192 unit variation in Poverty in the long run on average ceteris paribus. The previous period's deviation from long run equilibrium is corrected in the current period at an adjustment speed of 9 percent in the short run.

Fiscal Policy and Poverty Reduction in Sub Saharan Africa

The error Correction Model that explains the long run relationship between Fiscal Policy and Poverty Reduction is presented in the equation 4.03.

$$\Delta POVs_t=-0.69683POVs_{t-1}+0.12137TAXREVs_{t-1}+3.87995OREVs_{t-1}+3.7443CEXPs_{t-1}-5.259424REXPs_{t-1}+7.723836DEFs_{t-1}-53.2204 \quad \ldots\ldots 4.03$$

The Error Correction Term and the speed of adjustment was consistent by assuming a negative coefficient which confirms that the relationship between Fiscal Policy and Poverty reduction in sub Saharan Africa is in long run form. The previous period's deviation from long run disequilibrium is corrected in the current period at an adjustment speed of 69.7% in the short run. The equation implies that a unit change in tax revenue in Sub Saharan Africa is associated with a 0.12137 unit change in Poverty reduction in Sub Saharan Africa on average ceteris paribus in the long run. Also, a unit change in Oil Revenue in Sub Saharan Africa is associated with a 3.87995 unit change in Poverty on average ceteris paribus in the long run for the period under review. A change in Capital Expenditure in Sub Saharan Africa is associated with a 3.7443 unit change in Poverty Reduction in the region on average ceteris paribus in the long run. A unit change in Recurrent Expenditure in Sub Saharan Africa is associated with a 5.2594 unit change in Poverty Reduction in the long run on average ceteris paribus. While a unit change in Deficit Financing is associated a 7.72384 unit change in Poverty Reduction in Sub Saharan Africa in the long run on average ceteris paribus.

Fiscal Policy and Unemployment Reduction (Nigeria)

The Equation of the Error Correction Term and the long run model that explains the long run relationship between fiscal policy and unemployment reduction in Nigeria is shown in equation 4.04.

$$\Delta UNPNn_t = -0.01457UNPn_{t-1} + 2.387TAXREVn_{t-1} + 69.617OREVn_{t-1} + 6.189CEXPn_{t-1} + 7.5922REXPn_{t-1} - 8.995DEFn_{t-1} + 56.995 \ldots\ldots\ldots..4.04$$

The result in equation 4.04 shows that units change in Tax Revenue results toa 2.378 unit change in unemployment on average ceteris paribus in the long run. On the other hand, a unit change in Oil Revenue is associated with a 69.62 unit change in the level of unemployment in Nigeria in the long run on average ceteris paribus at a significant level of 5%. A unit change in government capital expenditure is associated with a 6.189 unit change in unemployment in Nigeria in the long run on average ceteris paribus. A unit change in Recurrent Expenditure on the long run is associated with a 7.59 unit change in the rate of unemployment in Nigeria on average ceteris paribus. A unit change in Deficit financing is associated with a 8.995 unit variation in the level of unemployment in Nigeria in the long run on average ceteris paribus. The previous period's deviation from long run equilibrium is corrected in the current period at an adjustment speed of1.5% percent in the short run.

Fiscal Policy And Unemployment Reduction (Ghana)

The Equation of the Error Correction Term and the long run model that explains the long run relationship between fiscal policy and unemployment reduction in Ghana is shown in equation 4.05.

$$\Delta UNPg_t = -0.0388UNPg_{t-1} - 0.241695TAXREVg_{t-1} + 64.411OREVg_{t-1} - 1.1729CEXPg_{t-1} - 1.9366REXPg_{t-1} - 55.8623DEFg_{t-1} - 10.942 \ldots\ldots\ldots.4.05$$

In the long run, a unit change in Tax revenue in the long run is associated with a 0.242 unit variation in unemployment in Ghana on average ceteris paribus. Meanwhile, a unit change in Oil Revenue in Ghana is associated with a 64.411 unit change in the rate of unemployment in the long run on average ceteris paribus. A unit change in Capital expenditure in Ghana is associated with a 1.173 unit variation in the rate of unemployment in the long run in Ghana on average ceteris paribus. A unit change in Recurrent Expenditure is associated with a 1.9366 unit variation in unemployment rate in Ghana in the long run on average ceteris paribus. Also,a unit change in Deficit Financing is associated with a 53.863 unit variation in unemployment in Ghana on average ceteris paribus in the long run.The previous period's deviation from long run equilibrium is corrected in the current period at an adjustment speed of 3.9% percent in the short run.

Fiscal Policy and Unemployment Reduction (Sub Saharan Africa)

The equation below shows the long run relationship existing between Fiscal Policy and Unemployment Reduction in Sub Saharan Africa.

$$\Delta UNPs_t - 0.356509UNPs_{t-1} + 42.49545TAXREVs_{t-1} + 308.8439OREVs_{t-1} - 25.72808CEXPs_{t-1} - 82.45367REXPs_{t-1} + 476.6917DEFs_{t-1} - 13.49685 \ldots\ldots\ldots\ldots\ldots\ldots\ldots.4.06$$

The Error Correction Term in Equation 4.06 was consistent by assuming a negative coefficient which confirms that a long run relationship exists between Fiscal Policy and Unemployment Reduction in Sub Saharan Africa. The result in the equation revealed that a unit change in Tax Revenue is associated with a 42.495 unit change in unemployment Reduction in Sub Saharan Africa in the long run on average ceteris paribus. A unit change in Oil Revenue in Sub Saharan Africa is associated with a 308.84 unit variation in Unemployment Reduction in the long run on average ceteris paribus. A unit change in Capital Expenditure is associated with a 25.73 unit variation in Unemployment Reduction in Sub Saharan Africa in the long run on average ceteris paribus. On average ceteris paribus, a unit change in Recurrent Expenditure is associated with a 82.454 unit variation in Unemployment reduction in Sub Saharan Africa. While as Deficit Financing changes by a unit, Unemployment Reduction changes by a 476.69 unit in the long run on average ceteris paribus for the period under review. The previous period's deviation from long run equilibrium is corrected in the current period at an adjustment speed of 35.65% in the short run.

Fiscal Policy and Human Development in Nigeria

In equation 4.07, the Error Correction Term and the long run model to explain if a long run relationship between fiscal policy and Human Development Index in Nigeria showed a speed of adjustment with a positive coefficient. This confirm that the relationship between fiscal policy and Human Development in Nigeria only exist in the short run. So the short run equation is presented:

$$HDIn_t=0.0496-3.39E\text{-}05TAXREVn_t+1.03E\text{-}05OREVn_t+0.000416CEXPn_t+7.51E\text{-}05REXPn_t+9.57E\text{-}05DEFn_t \ldots\ldots\ldots\ldots 4.07$$

In equation 4.7, a unit change in Tax Revenue on the short run is associated with a 0.000039 unit change in Human Development Index in Nigeria on average ceteris paribus. Oil Revenue in the short run has a 0.0000103 unit on Human Development Index in Nigeria on average ceteris paribus. This shows that revenue generated from oil are not spent on the betterment of the welfare of the people. The basic amenities necessary to elongate life are lacking with little or no access to education and low standard of living despite the huge revenue the government generates from oil in Nigeria. A change in Capital Expenditure is associated with a 0.00042 unit change in Human Development in Nigeria on average ceteris paribus in the short run. A unit change in recurrent expenditure in Nigeria in the short run is associated with a 0.0000751 unit increase in Human Development Index in Nigeria on average ceteris paribus. While, a change in Deficit Financing effect on Human Development in Nigeria by a 0.000096 unit in the short run on average ceteris paribus.

Fiscal Policy and Human Development in Ghana

The Equation of the Error Correction model and the long run equation that explains the long run relationship between fiscal policy and Human Development Index in Ghana are shown in equation 4.08.

$$\Delta HDIGn_t = -0.06037HDIg_{t-1} - 1.5428TAXREVg_{t-1} - 128.328OREVg_{t-1} - 3.8737CEXPg_{t-1} + 10.292REXPg_{t-1} - 1480.22DEFg_{t-1} + 0.2338 \ldots\ldots\ldots.4.08$$

From the long run error correction model in equation 4.8, a unit change in Tax Revenue is associated with a 1.543 unit change in Human Development Index in Ghana on average ceteris paribus in the long run. Capital expenditures on the other hand, have a 3.873unit effect on Human development Index in Ghana on average ceteris paribus for the period under review in the long run. Deficit Financing has a 1480.22unit effect on Human Development Index in Ghana in the long run on average ceteris paribus. This entails that government borrowing in Ghana are well utilized in providing the basic amenities that enhance the standard of living of the people of the country. But, a unit change in Oil Revenue results to a 128.328 unit variation in Human

Development Index in Ghana in the long run. The speed at which the deviation from the long rung equilibrium is adjusted in the short run is 5.8% per annum.

Fiscal Policy and Human Development Index (Sub Saharan Africa)

The Error Correction equation that defines the long run relationship existing between Fiscal Policy and Human Development Index in Sub Saharan Africa is shown in equation 4.09.

$$\Delta HDIs_t=-0.1291HDIs_{t-1}+81.8466TAXREVs_{t-1}+552.441OREVs_{t-1}-27.09CEXPs_{t-1}+162.91REXPs_{t-1}+93.849DEFs_{t-1}-1.1276 \qquad \ldots\ldots 4.09$$

This equation 4.09 confirms that a long run relationship exists between Fiscal Policy and Poverty Reduction in Sub Saharan Africa as the Error Correction Term and the Speed of Adjustment was consistent by assuming a negative coefficient. So, the previous period's deviation from long run equilibrium is corrected in the current period at an adjustment speed of 12.9 percent in the short run. So, units change in Tax Revenue results to a 81.85 unit variation in Human Development Index in Sub Saharan Africa in the long run on average ceteris paribus. In the long run, a unit change in Oil Revenue in Sub Saharan Africa results to a 552.44 unit variation in Human Development Index in Sub Saharan Africa for the period under review. A unit change in Capital Expenditure in Sub Saharan Africa in the long run is associated with a 27.09 unit variation in Human Development Index for the period under review on average ceteris paribus. A unit change in Recurrent Expenditure leads to a 162.91 unit variation in Human Development Index in the long run on average ceteris paribus. A unit change in Deficit Financing in Sub Saharan Africa results to a 93.849 unit variation in Human Development Index in the long run on average ceteris paribus.

Fiscal Policy and Economic Growth in Nigeria

In equation 4.10, the long run Error Correction Term that explains the long run relationship between fiscal policy and Economic Growth in Nigeria is presented:

$$\Delta GDPn_t = -0.02687GDPn_{t-1} + 0.00348TAXREVn_{t-1} - 0.27079OREVn_{t-1} - 0.01512CEXPn_{t-1} - 0.01487REXPn_{t-1} - 0.01492DEFn_{t-1} + 2324619 \ldots\ldots\ldots 4.10$$

Equation 4.07 shows that a unit change in Tax Revenue in Nigeria is associated with a 0.0035 unit change in Gross Domestic Product at on average ceteris paribus in the long run. A unit change in Oil Revenue in the long run in Nigeria is associated with a 0.271 unit effecton the Gross Domestic Product on average ceteris paribus for the period under review. A unit change in Capital Expenditure is associated with a 0.0151unit variation in Gross Domestic Product on average ceteris paribus in the long run. Recurrent Expenditure is expected to exert a positive long run effect on economic growth. But, in the Nigerian factor, a unit change in Recurrent Expenditure is associated with a 0.0149 unit change in economic growth on average ceteris paribus in the long run, for the period under review. This also shows that a greater part of government recurrent expenditure does not benefit the populace; instead they end up in the hands of corrupt politicians in the country. Also, in the long run Deficit Financing exerts a 0.0149unit effect on economic growth in Nigeria on average ceteris paribus. It is clear that the government borrow money to be embezzled, instead of stimulating the growth of the economy. The speed at which the deviation from the long rung equilibrium is adjusted in the short run is 2.7% per annum.

Fiscal Policy and Economic Growth in Ghana

The Equation of the Error Correction Term and the long run model that explains the long run relationship between fiscal policy and Economic Growth in Ghana is shown in equation 4.11.

$$\Delta GDPg_t = -0.557GDPg_{t-1} + 0.083108TAXREVg_{t-1} - 46.103OREVg_{t-1} + 0.7619CEXPg_{t-1} + 0.4746REXPg_{t-1} + 75.184DEFg_{t-1} - 14.888 \ldots\ldots\ldots 4.11$$

Equation 4.11 shows that a unit change in Tax Revenue is associated with a 0.0831 unit change in Gross Domestic Product in Ghana on average ceteris paribus in the long run. Capital Expenditure has acoefficient of 0.762. This entails that a unit change in Capital Expenditure in Ghana on the long run, results to a 0.762 unit change in economic growth in Ghana on average ceteris paribus. Recurrent expenditure has a significant coefficient of 0.4746. This confirms that a unit change in Recurrent Expenditure in Ghana is associated with a 0.4746 unit variation in economic growth in Ghana in the long run. This explains the as government increases recurrent expenditure, income of individuals increase, and it's multiplier effect impacts on consumption, savings and investment that enhance economic growth. The coefficient of Deficit Financing in

Ghana in the long run is 75.184 which entails that on average ceteris paribus, a unit change in government deficit financing is associated with a 75.184 unit change in economic growth.The speed at which the deviation from the long rung equilibrium is adjusted in the short run is 55.7% per annum. This means that following the short run disequilibrium, 55.7% of the adjustment to the long run takes place within one year.

Fiscal Policy and Economic Growth (GDP) in Sub Saharan Africa

The equation 4.12 shows the Error Correction Term and the long run equation that explains the relationship between fiscal policy and Economic Growth in Sub Saharan Africa:

$$\Delta GDPs_t = -0.31134GDPs_{t-1} - 0.2901TAXREVs_{t-1} - 1.1974OREVs_{t-1} - 0.0989CEXPs_{t-1} + 1.0315REXPs_{t-1} - 2.5773DEFs_{t-1} - 194.955 \ldots\ldots\ldots 4.12$$

The Error Correction Term and the Speed of Adjustment was consistent by assuming a negative coefficient which confirms that the relationship between Fiscal Policy and Economic Growth (GDP) is in the long run form. The speed at which the deviation from the long rung equilibrium is adjusted in the short run is 31.1% per annum. This means that following the short run disequilibrium, 31.1% of the adjustment to the long run takes place within one year. A unit change in Tax Revenue is associated with a 0.2901 unit variation in Gross Domestic Product in the long run on average ceteris paribus. A unit change in Oil Revenue is associated with a 1.197 unit variation in Gross Domestic Product in Sub Saharan Africa In the long run on average ceteris paribus. On average ceteris paribus, a unit change in Capital Expenditure in Sub Saharan Africa is associated with a 0.0989 unit variation in Gross Domestic Product in the long run. A unit change in Recurrent Expenditure in Sub Saharan Africa is associated with a 1.0315 unit variation in Gross Domestic Product in the long run. On average ceteris paribus, a unit change in Deficit Financing is associated with a 2.577 unit variation in Gross Domestic Product in Sub Saharan Africa in the long run.

4.1.5 Test of Hypotheses

To aid the understanding of this research, the four hypotheses of this research were tested. Two sub hypotheses were tested for each hypothesis: i.e. for Nigeria and Ghana. All hypotheses were tested at 5% level of significance.

4.1.5.1: Hypothesis One

H_0: Fiscal policy has no significant effect on economic growth in Sub Saharan Africa.

A. **For Nigeria**

H_0: Fiscal policy has no significant effect on economic growth in Nigeria.

This hypothesis was tested using the VECM Least Squares result in Table 4.21.

Table 4.21: VECM Least Squares Result (Dependent Variable: GDP) Nigeria

R-squared	0.979961			
Adjusted R-squared	0.966184			
F-statistic	71.13029	Durbin-Watson stat		1.399841
Prob(F-statistic)	0.000000			

Source: Researchers computation using E-View version 10

From the result in Table 4.21, F- statistic value of 71.13029 and prob.0.0000 is statistically significant at 5% level of significance and shows that a significant relationship exist between fiscal policy and economic growth in Nigeria. This is in line with the Cointegration results in Table 4.21. The Johansen Cointegration result shows that there are at most five (5) cointegrating equations which suggest that a long run relationship exists between fiscal policy and economic growth in Nigeria. The R^2value of 0.97996 shows goodness of fit of the model. And the adjusted R^2 indicates that the model accounts for about 97% of the total variation in Gross Domestic Product in Nigeria on average ceteris paribus in the long run. The research therefore, rejects the null hypothesis and concludes that Fiscal policy has a strong positive and significant effect on economic growth in Nigeria.

This conforms to the a priori expectation of the model and in line with the work of Garson, (1998), Caseli &Esquivel, (1996), .Enache, (2009), Babalola and Aminu (2012). In their studies on the relationship between fiscal policy and economic growth believe that a positive relationship exist between fiscal policy and economic growth.

B. **Ghana**

H_0: Fiscal policy has no significant effect on economic growth in Ghana.

This hypothesis was tested using the VECM Least squares equation shown in Table 4.22:

Table 4.22: VECM Least Squares Result (Dependent Variable: GDP) Ghana:

R-squared	0.617053			
Adjusted R-squared	0.444726			
F-statistic	3.580720	Durbin-Watson stat		2.071306
Prob(F-statistic)	0.008388			

Source: Researchers computation using E-View version 10

This VECM Least Squared result in table 4.22 above shows R^2 of 0.617 indicating goodness of fit. Adjusted R^2 of 0.4447 indicates that, the model accounts for a 44.5% of the total variation in gross domestic Product in Ghana in the long run, on average ceteris.

The f-statistic of 3.5807 (prob.0.0084) is statistically significant at 5% level of significance. This means that the explanatory variables jointly have significant effect on economic growth in the long run in Ghana.

Also the result of the Johansen Cointegration test confirms that there are at most three (3) cointegrating equations. This shows that a long run relationship exist between fiscal policy and economic growth in Ghana.

The researcher therefore, rejects the null hypothesis and concludes that 'Fiscal policy has a positive and significant effect on economic growth in Ghana'. This is in line with the expectation of this research and in conformity with the research work of Havi & Enu (2014) that fiscal policy affects economic growth in Ghana.

C. **Sub Saharan Africa**

H_0: Fiscal policy has no significant effect on Economic Growth in Sub Saharan Africa.

This hypothesis was tested using the VECM Least squares equation shown in table 4.23 below:

Table 4.23: VECM Least Squares Result (Dependent Variable: GDP) Sub Saharan Africa:

R-squared	0.934968			
Adjusted R-squared	0.848259			
F-statistic	10.78282	Durbin-Watson stat		2.368571
Prob(F-statistic)	0.000087			

Source: Researchers computation using E-View version 10

This VECM Least Squared result in table 4.23 above shows R^2 of 0.935 indicating goodness of fit. Adjusted R^2 of 0.848 indicates that, the model accounts for a 84.8% of the total variation in gross domestic Product in Sub Saran Africa in the long run, on average ceteris.

The f-statistic of 10.78 (prob.0.000087) is statistically significant at 5% level of significance. This means that the explanatory variables jointly have significant effect on economic growth in the long run in Sub Saharan Africa. Also, the results of the Johansen Cointegration Test suggest that a long run relationship exist between Fiscal Policy and Economic Growth in Sub Saharan Africa.

The research therefore rejects the null hypothesis and conclude that a long run relationship exist between Fiscal Policy and Economic Growth in Sub Saharan Africa.

4.1.5.2: Hypothesis Two:

H_0: Fiscal policy has no significant effect on human development in Sub Saharan Africa.

A. **Nigeria**

This hypothesis was tested using the VECM least squared result shown in Table 4.23.

Table 4.24: VECM Least Squares Result (Dependent Variable: HDI) Nigeria

R-squared	0.712510			
Adjusted R-squared	0.655012			
F-statistic	12.39192	Durbin-Watson stat		0.460734
Prob(F-statistic)	0.000004			

Source: Researchers computation using E-View version 10

In the regression result in Table 4.24, R-Squared value of 0.7125, indicates goodness of fit and the adjusted R-Squared value of 0.65501, shows that the model accounts for 65.5%% of the total variation in Human Development Index in Nigeria on average ceteris paribus.

F-Statistic of 12.39 (Prob.0.000004) is statistically significant at 5% level of significance. And with the result of the Cointegration test in Table 4.9 above, which showed the existence of at most three (3) cointegrating equations and the existence of a short run relationship between fiscal policy and Human Development Index in Nigeria, the research rejects the null hypothesis of no relationship and conclude that a significant short run relationship exist between fiscal policy and Human Development Index in Nigeria. This is in line with the work of Imide, & Imuoghele, (2019) on the impact of fiscal policy on Human Development Index in Nigeria.

B. **Ghana**

Fiscal policy has no significant effect on Human Development in Ghana.

This hypothesis is tested using VECM Least squared result shown in Table 4.25.

Table 4.25: VECM Least Squared Result (Dependent Variable: HDI) Ghana

R-squared	0.127821			
Adjusted R-squared	-0.204437			
F-statistic	0.384705	Durbin-Watson stat		2.053027
Prob(F-statistic)	0.916766			

Source: Researchers computation using E-View version 10

The Regression result in Table 4.25 shows R-Squared value of 0.1278, adjusted R-Squared value of 0.2044, F- statistics value of 0.3847 (Prob.0.9168). It shows that a weak relationship exist between fiscal policy and Human Development Index in Ghana. The result indicates that changes in the explanatory variables jointly account for only about 20.4% variation in Human Development Index in Ghana on average ceteris paribus. The F- statistics value of 0.3847 (Prob.0.9168) is not statistically significant at 5% level of significance. Though, the Johansen Cointegration result in table 4.10 shows that there are at most two (2) cointegrating equations which suggest a long run relationship between fiscal policy and Human Development Index in Ghana.

The research accepts the null hypothesis and concludes that Fiscal Policy does not significantly affect Human Development Index in Ghana. This is not in line with the expectation of this research.

C. Sub Saharan Africa

Fiscal policy has no significant effect on human development in Sub Saharan Africa.

This hypothesis is tested using VECM Least squared result shown in Table 4.26.

Table 4.26: VECM Least Squared Result (Dependent Variable: HDI) Sub Saharan Africa:

R-squared	0.201060			
Adjusted R-squared	-0.720795			
F-statistic	0.218103	Durbin-Watson stat		2.177374
Prob(F-statistic)	0.996838			

The Regression result in Table 4.26 shows R-Squared value of 0.201, F- statistics value of 0.218 (Prob.0.996). It shows that a weak relationship exist between fiscal policy and Human Development Index in Ghana. The result indicates that changes in the explanatory variables jointly account for only about 20.1% variation in Human Development Index in Ghana on average ceteris paribus. The F-statistic value of 0.218 and probability 0.9968 is not statistically significant at 5% level of significance; the research accepts the null hypothesis and concludes that Fiscal Policy has no significant effect on Human Development Index in Sub Saharan Africa.

4.1.5.3: Hypothesis Three

H_0: Fiscal policy has no significant effect on unemployment in Sub Saharan Africa.

A. **Nigeria:**

This hypothesis was tested using VECM least squared result in Table 4.27.

Table 4.27:Regresssion Results (Dependent Variable: Unemployment) Nigeria:

R-squared	0.348310			
Adjusted R-squared	0.022465			
F-statistic	1.068944	Durbin-Watson stat		2.147024
Prob(F-statistic)	0.429168			

Source: Researchers computation using E-View version 10

R-squared result shows that a weak relationship exists between fiscal policy and unemployment in Nigeria. This indicates a 34.8% relationship existing between fiscal policy and unemployment in Nigeria. The adjusted R-square shows that the model accounts for about only 2.25% of the total variation in the model on average ceteris paribus. F-statistic value of 1.069(Prob. 0.42928) is not statistically significant at 5% level of significance. This contradicts the Johansen Cointegration test result in Table 4.07 which shows that there at most three (3) cointegrating equations that suggested a long run relationship existing between fiscal policy and unemployment in Nigeria.

The research therefore, accepts the null hypothesis and concludes that Fiscal Policy has no significant effect on unemployment in Nigeria. This result contradicts existing literature, the a priori expectation and the results of Obayori, (2016), Egbulonu, & Amadi, (2016), in their work titled: Effect of Fiscal Policy on Unemployment in Nigeria; which revealed that a long run relationship exists between fiscal policy and unemployment in Nigeria.

B. Ghana

Fiscal policy has no significant effect on Unemployment in Ghana.

This hypothesis was tested using the VECM least squares results shown in Table 4.28.

Table 4.28: VECM Least Squares Results (Dependent Variable: Unemployment) Ghana

R-squared	0.515942			
Adjusted R-squared	0.331540			
F-statistic	2.797908	Durbin-Watson stat		2.082031
Prob(F-statistic)	0.028028			

Source: Researchers computation using E-View version 10

In testing the hypothesis of no relationship between fiscal policy and unemployment in Ghana using the result in table 4.28, The R-Square value is 0.5159, shows that a 51.6% relationship exist between fiscal policy and unemployment in Ghana. The Adjusted R-Squared value of 0.3315 indicates that the model accounts for about 33.2% of the total variation in Unemployment in Ghana for the period under review on average ceteris paribus. Durbin-Watson Statistics of 2.08 confirms the absence of serial correlation in the model. The F.statistics of 2.7979 (prob.0.028) is statistically significant at 5% level of significance.

The research therefore, rejects the null hypothesis and conclude that a significant long run relationship exist between fiscal policy and unemployment in Ghana.

C. Sub Saharan Africa

Fiscal policy has no significant effect on Unemployment in Sub Saharan Africa.

This hypothesis was tested using the VECM least squares results shown in Table 4.29.

Table 4.29:VECMLeast Squares Results (Dependent Variable: Unemployment) Sub Saharan Africa:

R-squared	0.733158			
Adjusted R-squared	0.425264			
F-statistic	2.381202	Durbin-Watson stat		1.826315
Prob(F-statistic)	0.061927			

In the regression result in Table 4.29, R-Squared value of 0.733, indicates goodness of fit and the adjusted R-Squared value of 0.4253 shows that the model accounts for 42.53% of the total variation in Unemployment in Sub Saharan Africa on average ceteris paribus.

The F-Statistic 2.38 (Prob. 0.0619) is not statistically significant at 5% level of significance. The null hypothesis is accepted and the research concludes that Fiscal Policy has no significant effect on Unemployment in Sub Saharan Africa.

4.1.5.4: Hypothesis Four

H_0: Fiscal policy has no significant effect on poverty reduction in Sub Saharan Africa.

A. Nigeria:

There is no significant effect of Fiscal policy on Poverty reduction in Nigeria.

This hypothesis is tested using the regression results shown in Table 4.30.

Table 4.30: Regression Results (Dependent Variable: Poverty Index)

R-squared	0.304177			
Adjusted R-squared	0.165013			
F-statistic	2.185740	Durbin-Watson stat		1.746629
Prob(F-statistic)	0.087979			

Source: Researchers computation using E-View version 10

In testing the hypothesis of no relationship between fiscal policy and poverty reduction in Nigeria using the result in Table 4.30, The R-Square value is 0.3042, shows that about 30.42% relationship exist between fiscal policy and poverty reduction in Nigeria. The Adjusted R-Squared value of 0.165 indicates that the model accounts for about 16.5% of the total variation in poverty in Nigeria for the period under review on average ceteris paribus. The F.statistic value of 2.186 (prob. 0.088) is not statistically significant at 5% level of significance. The research accepts the null hypothesis and concludes that there is no significant relationship between fiscal policy and poverty in Nigeria.

B. **Ghana**

Ho: Fiscal policy has no significant effect on Poverty reduction in Ghana.

This hypothesis is tested using the least squared results shown in Table 4.31 below.

Table 4.31: VECM Least Squares Results (Dependent Variable: Poverty Index) Ghana

R-squared	0.360110			
Adjusted R-squared	0.116343			
F-statistic	1.477268	Durbin-Watson stat		2.203450
Prob(F-statistic)	0.224259			
Source: Researchers				

Source: Researchers computation using E-View version 10

From the Table 4.21 R-squared value is 0.36, while the Adjusted R- Squared value is 0.116. This means that the relationship between fiscal policy and Poverty Reduction in Nigeria is weak and insignificant at 5% level of significance. The f-ratio of 1.4773 (Prob. 0.224) is not statistically significant at 5% level of significance.

The research accepts the null hypothesis and concludes that fiscal policy has no significant effect on poverty index in Ghana. This contradicts the a priori expectation of the model.

H_0: Fiscal policy has no significant effect on poverty reduction in Sub Saharan Africa.

C. **Sub Saharan Africa**

There is no significant effect of Fiscal policy on Poverty reduction in Sub Saharan Africa.

This hypothesis is tested using the regression results shown in Table 4.32.

Table 4.32: Regression Results (Dependent Variable: Poverty Index) Sub Saharan Africa.

R-squared	0.806561			
Adjusted R-squared	0.583363			
F-statistic	3.613654	Durbin-Watson stat		2.724104
Prob(F-statistic)	0.012605			

Source: Researchers computation using E-View version 10

In the regression result in Table 4.32, R-Squared value of 0.8066, indicates goodness of fit and the adjusted R-Squared value of 0.5834 shows that the model accounts for 58.34% of the total variation in Poverty in Sub Saharan Africa on average ceteris paribus.

The F-Statistic 3.613 (Prob. 0.0126) is statistically significant at 5% level of significance. The research rejects the null hypothesis and concludes that Fiscal Policy has significant effect on Poverty Reduction in Sub Saharan Africa.

4.2 Discussion

4.2.01: Fiscal Policy and Economic Growth In Nigeria

The result of the Johansen Cointegration test in Table 4.11 suggest a long run relationship with the existence of at most five (5) cointegrating equations. In order to confirm the long run relationship, the Vector Error Correction Mechanism was adopted which confirmed the existence of a long run relationship between fiscal policy and economic growth in Nigeria. This is in line with literature as fiscal policy is expected to have a significant effect on the Gross Domestic Product. This is in line with the research of Havi and Enu (2014) and Amos, Uniamikogho, & Aigienohuwa (2017). The result indicates that the Nigerian government has pursued it fiscal policy objectives more aggressively by adjusting both taxes and expenditure at the same time. The adjustment in tax and expenditure has impacted on consumption, savings, and private investment which have resulted to a significant effect on the gross domestic product of Nigeria.

The coefficient of the explanatory variables in the least squares result in appendix IV(a)i indicates that Deficit Financing has a significant long run effect on the Gross Domestic Product. Deficit Financing has a coefficient of -6.491, t.value -2.3468 (prob. 0.0321) and it is statistically significant at 5% level of significance {See Appendix IV(a)i}. This means that adjustment in government borrowing has a significant effect on the Gross Domestic Product in Nigeria in the long run. This happens when government spends more than the revenue generated from taxes and other non-tax sources. In the long run, the budget deficit affects economic growth as the funds borrowed to fund the deficit are no longer available to private investment as it reduces the financial capital available to them.

This is in line with the work of Osuma, Isibor, Adesina, & Abiola(2018), which confirms that public debts have significant long run effect on the economic growth of Nigeria.

At 10% level of significance, the coefficient of Recurrent Expenditurein the VECM least squares result in Appendix IV(a)i has a long run significant effect on economic growth in Nigeria. This is so, because as government increases recurrent expenditure, disposable income increases, which affects consumption and savings. Consumption destroys the finished product, making consumers to produce more. Savings as well increases banks profitability which encourages lending and reduced cost of capital. All these and more account for the effect of recurrent expenditure on economic growth.

4.2.02 Fiscal Policy And Economic Growth In Ghana

The Johansen Cointegration test shows that there are at most three cointegrating equations in the model of the relationship between Fiscal Policy and economic growth in Ghana, which suggest a long run relationship. Vector Error Correction Mechanism was used to confirm the long run relationship as well as estimate the long run equations. The VECM in Appendix IV(b)ii confirmed that a long run relationship exist between fiscal policy and economic growth in Ghana. The explanatory variables jointly have significant effect on economic growth in Ghana, as confirmed with the F-statistics value of 3.581 (Prob. 0.0084) in the least squares result in

Appendix IV(b)ii is statistically significant at 5% level of significance.This is in line with the research of Ugwuanyi and Ugwunta (2017) on the Fiscal Policy and Growth: The Examination of selected Countries in Sub Sahara Africa which revealed that fiscal policy has significant long run effect on economic growth in Sub Saharan Africa. This is in line with existing literature and the a priori expectation of the model of this research. Adjustments in both taxes and government spending have a multiplier effect on the economy. These adjustments affect disposable income, saving, consumption, private investment and government spending which make up the Gross Domestic product of an economy.

4.2.03 Fiscal Policy and Economic Growth in Sub Saharan Africa

The result of the Johansen Cointegration test shows that there are at most four (4) Cointegrating equations in the model that explains the relationship between Fiscal Policy and Economic Growth in Sub Saharan Africa. This suggested that a long run relationship exists between Fiscal Policy and Economic Growth In Sub Saharan Africa for the period under review. To confirm the existence of a long run relationship in the model, it was subjected to the Vector Error Correction Test. The Vector Error Correction test result was consistent with the speed of adjustment/error correction term assuming a negative coefficient which confirmed that Fiscal Policy has a long run effect on Economic Growth in Sub Saharan Africa for the period under review. Again, the F.statistic 10.783 (Prob. 0.000087) is statistically significant at 5% level of significance. This means that fiscal policy variables (Tax Revenue, Oil Revenue, Capital Expenditure, Recurrent Expenditure and Deficit Financing) jointly have significant long run effect on economic growth in sub Saharan Africa. Individually, Capital Expenditure, Recurrent Expenditure and Government Deficit Financing significantly affected economic growth in Sub Saharan Africa in the long run at 5% level of significance. This is in line with theory, as government spending have significant and multiplier effect on Gross Domestic Product of any economy. But, enhanced economic growth of any economy does not automatically transmit to economic development.

When government increase spending inform of income, capital projects etc, disposable income will rise, savings and consumption will increase. This enhances economic growth, as the money saved in the bank is lent to the private sector to enhance their output and consumption will destroy the finished products giving reason for more production which in turn enhances the Gross Domestic Product of any nation in the long run. The result also revealed that Government Deficit has significant long run effect on Economic Growth in Sub Saharan Africa. This happens when government borrow to fund Capital projects, support local production or fund Agricultural projects. In the long run it enhances economic growth in the economy.

4.2.04 Fiscal Policy and Poverty Reduction In Nigeria

The result of the Johansen Cointegration test, shows that the model for the relationship between fiscal policy and poverty reduction in Nigeria has at most five (5) cointegrating equations, which suggest a long run relationship. In order to confirm the long run relationship and estimate the five cointegrating equations, the VECM was adopted. But the result of the VECM in Appendix IV(a)ii confirmed that the relationship between fiscal policy and poverty reduction in Nigeria only exist in the short run. So, the relationship was estimated in the short run. The short run least squares result shows F-Statistic value of 2.186 (Prob.0.08798), which is not statistically significant at 5% level of significance. Therefore, the relationship between fiscal policy and poverty reduction in Nigeria only exist in the short run, but not statistically significant at 5% level of significance. This means that government fiscal policy measures aimed at reducing poverty in Nigeria are not sustained in the long run, this is why poverty continues to increase in Nigeria with many Nigerians joining the penury level per day. It is obvious the fiscal policy programs of the government of Nigeria only benefit the political class.

The t-statistic values of the individual explanatory variables show that only Tax Revenue is statistically significant at 5% level of significance in the short run {See Appendix IV(a)ii}. While, Recurrent Expenditure is statistically significant in explaining the variation in poverty in Nigeria at 10% level of significance in the short run. Other explanatory variables (Oil Revenue, Capital Expenditure, and Deficit Financing) are not statistically significant in explaining the short run variation in Poverty in Nigeria.

The coefficient Tax Revenue is -0.01046 and t-statistic value -2.80215 (prob. 0.009) is statistically significant at 5% level of significance in the short run. A unit change in Tax Revenue reduces poverty by a significant 0.01046 unit in the short run. This is in line with the a priori expectation of the model and in line with existing literature. It is also in line with the research of Ojijo and Oluwatosin (2018) which revealed that tax has a significant effect on the economy of Nigeria in the short run. This result also conforms to the research of Amos, Uniamikogho & Aigienohuwa (2017) which reveals that taxes have significant effect on the Nigerian economy. Progressive tax system in place in Nigeria has helped in reducing the gap between the rich and the poor in the short run. This has stimulated consumer spending by middle and lower income earners while the wealthy who can afford to pay a fair share of public service cost, enjoy this tax system that is skewed to their favor. So, higher tax on luxury goods should be encouraged.

4.2.05: Fiscal Policy and Poverty Reduction In Ghana:

In table 4.6 above, the result of the Johansen Cointegration test shows that the model has at most two (2) cointegrating equations, which suggests a long run relationship. To confirm the long run relationship existing between fiscal policy and poverty reduction in Ghana, the Vector Error

Correction Mechanism was adopted. In Appendix IV(b)iii, the speed of adjustment in the VECM shows -0.088599, which confirms the existence of a long run relationship between fiscal policy and poverty reduction in Ghana.But, the F-Statistics value of 1.0477 with probability of 0.2243 is not statistically significant at 5% level of significance. This means that the long run relationship existing between fiscal policy and poverty reduction in Ghana is not statistically significant at 5% level of significance. The Squared result of 0.36011 in Appendix IV(b)iii indicates a weak relationship in the long run. And the Adjusted R-Squared indicates that the model accounts for only 11.6% of the total variation in the model on average ceteris paribus in the long run. This means that government fiscal policy in Ghana have impacted significantly on Poverty reduction in Ghana in the long run.

This has contributed to the growing level of poverty in sub Saharan Africa. The t-stat values and probabilities of the individual explanatory variables show that Government Deficit is statistically significant at 5% level of significance while other explanatory variables (Tax Revenue, Oil Revenue, Capital Expenditure and Recurrent Expenditure) have t.stat. (Prob.) greater than 0.05, so are not statistically significant at 5% level of significance. This occurs when government borrow to finance agricultural inputs like fertilizer, provide improved seedlings that ensures greater harvest. These have direct effect on low income earners who are mostly poor. Raising farm income is known as the core of antipoverty as majority of the poor depend on farm produce. Growth in agricultural productivity of peasant farmers is more effective in benefiting the poorest majority of a country's population than growth from other nonagricultural sectors.

When government borrowed funds are used to enhance productivity, it generates employment and reduces poverty in the country. Making available employment opportunities is more important than increasing income and access to basic needs. The result of this research is in line with the result of Okon and Onoja, (2017). Again the crowding out effect of deficit financing on government spending is another channel through which it affects poverty. Debt can also affect poverty by reducing the economic growth through the investment channel by reducing government expenditures and increasing uncertainties. The servicing of debts is another channel as it diverts budgetary resources from investment which is needed to stimulate economic growth in a country.

4.2.06 Fiscal Policy And Poverty Reduction In Sub Saharan Africa

Fiscal Policy is expected to reduce poverty in any economy or region. This reduction in poverty happens when government increases spending, reduces tax which encourages production. And more production gives rise to increase unemployment which reduces poverty. Johansen Cointegration Test was conducted to suggest if the equation of the model will be estimated in the short run or long run. The result revealed the existence of at most (3) three cointegrating equations which suggest that the relationship in the model exist in the long run. The Vector Error Correction Mechanism confirmed the existence of a long run relationship between Fiscal Policy and Poverty Reduction in Sub Saharan Africa by assuming a negative coefficient in the error correction term. The f.statistic 3.614 (Prob. 0.0126) indicated that all the explanatory variables in the model jointly have effect on Poverty Reduction in Sub Saharan Africa. Amongst the explanatory variables in the model, only the lag of Deficit Financing has significant effect on Poverty Reduction in the long run at 5% level of significance with a t.prob of 0.0203. The other explanatory variables do not have significant effect on Poverty Reduction in Sub Saharan Africa in the long run. Little wonder why 27 out of the 28 poorest countries are in Sub Saharan Africa with an average poverty rate of 41%.

4.2.07 Fiscal Policy and Unemployment in Nigeria

Fiscal Policy can reduce unemployment by increasing aggregate demand and the rate of economic growth. This is achieved when government pursue expansionary policy by cutting taxes and increasing expenditure. To establish is a long run or short run relationship exist between fiscal policy and unemployment reduction in Nigeria, the Johansen Cointegrationg test was adopted. Comparing the Trace statistics with the 5% critical value, result indicates at most three (3) cointegrating equations (see Table 4.07). This suggests that the relationship may be a long run effect. So, the Vector Error Correction Mechanism was adopted {see Appendix IV(a)iii} which confirmed that the relationship between fiscal policy and unemployment in Nigeria has a long run effect. But, the R-Squared value of 0.3483 shows a weak relationship existing between fiscal policy and unemployment in Nigeria.

The Adjusted R-Squared shows that the model accounts for only 2.2% of the total variation in the model on average ceteris paribus. The f.stat.value of 1.0689 (prob. 0.4292) is not statistically significant at 5% level of significance.This means that the long run relationship existing between fiscal policy and unemployment is not statistically significant in the long run. The main goals of fiscal policy are to reduce unemployment, reduce poverty and encourage economic growth. But in the case of Nigeria, it has no significant effect. Unemployment has a very severe effect on the economy as it impacts on the government's ability to create income and it reduces economic activities. When unemployment is high, fever people are paying taxes, with fewer people having disposable income to spend on goods and services. When consumer spending is low, business growth and expansion are affected with in turn hampers economic growth.

The individual explanatory variables (Tax Revenue, Oil Revenue, Capital Expenditure, Recurrent Expenditure and Deficit Financing) have their t.statistic probabilities greater than 0.05. So, the individual explanatory variables (Tax Revenue, Oil Revenue, Capital Expenditure, Recurrent Expenditure and Deficit Financing) have no significant effect on unemployment in Nigeria in the long run. This conforms to the research of Obayori, (2016)on fiscal policy and Unemployment in Nigeria, which shows the long run relationship between fiscal policy and unemployment, is not statistically significant at 5% level of significance. If fiscal policy has no significant long run effect on unemployment in Nigeria, no need to wonder why unemployment is on the rise in Nigeria.

4.2.08 Fiscal Policy and Unemployment In Ghana

The result of the Johansen Cointegration test suggest a long run relationship between fiscal policy and unemployment in Ghana with the result showing that there are at most two (2) cointegrating equations in the model that explains the relationship between fiscal policy and unemployment in Ghana (See Table 4.07). To estimate the long run equations the Vector Error Correction Mechanism (VECM) was adopted, putting into consideration the number of cointegrating equations in the model. The VECM confirms that a long run relationship exist between fiscal policy and unemployment in Ghana. The VECM least squares results in Appendix IV(b)i shows R-Squared value of 0.516, Adjusted R-Squared of 0.3315.

This means that the model is the long run relationship between fiscal policy and unemployment in Ghana is strong. But, the model accounts for only 33.2% of the total variation in Unemployment in Ghana for the period under review on average ceteris paribus. The F.Statistic value of 2.7979 with probability of 0.0280 is statistically significant at 5% level of significance. This means that the explanatory variables jointly have a significant long run effect on unemployment in Ghana. This is in line with the research work of Obayori, (2016). But, t. statistic values of the individual explanatory variables (Tax Revenue, Oil Revenue, Capital Expenditure, Recurrent Expenditure and Deficit Financing) are not statistically significant in explaining the long run variation in the model.

4.2.09 Fiscal Policy and Unemployment in Sub Saharan Africa

Unemployment has continued to rise in Sub Saharan Africa, leading increased poverty, high rate of insurgency and youth's restiveness in the region. In order to establish a link between Fiscal Policy and Unemployment in the region, Johansen Cointegration Test was conducted, which revealed the existence of at most (3) three cointegrating equations and suggest that Fiscal Policy has a long run effect on Unemployment in Sub Saharan Africa for the period under review. The Vector Error Correction Model confirmed the existence of a long run effect of Fiscal Policy on Unemployment Reduction in the model of the relationship. The F. statitistic 2.381 (Prob0.0619) is not statistically significant at 5% chosen level of significance. This implies that Fiscal Policy Variables (Tax Revenue, Oil Revenue, Capital Expenditure, Recurrent Expenditure and Deficit Financing) do not have a long run significant effect on Unemployment reduction in Sub Saharan Africa. When consumption doesn't chance as a result of high interest rate, opportunity cost of spending will increase thereby decreasing consumption spending and saving. It becomes so hard for investors to obtain credit from banks with decreases investment. And when investment decreases, new jobs are not created while old workers are laid off thereby contributing to increase in unemployment

4.2.10 Fiscal Policy and Human Development In Nigeria

The primary purpose of governments is to sustain the human development of its citizens. And Human Development Index is a statistical index comprising of life expectancy, access to education and standard of living. All these indexes of Human Development are the key roles of fiscal policy, but they have been on the decline in Sub Saharan Africa. So, to determine the relationship between fiscal policy and human development in Nigeria, the Johansen Cointegration Test was adopted. The Johansen Cointegration test in Table 4.9 above shows that there are at most three (3) Cointegrating equations in the model, which suggest a long run relationship. To confirm the long run relationship and estimate the long run equations, the VECM was adopted. But, the results of the VECM in appendix IV(a)iv shows that the ECT_{t-1} (0.062922) has a positive coefficient, which confirms that the relationship between Fiscal Policy and Human Development in Nigeria is in the short run. So, the least squares result in Appendix IV(a)iv shows adjusted R-Squared value of 0.655, meaning that the model accounts for a 65.5% of the total variation in Human Development in Nigeria in the short run on average ceteris paribus. The F- Statistic of 12.391 and F-Stat. probability of 0.00004 is statistically significant at 5% level of significance in the short run.

This means that the explanatory variables (Tax Revenue, Oil Revenue, Capital Expenditure, Recurrent Expenditure and Deficit Financing) jointly have significant short run effect on Human Development Index in Nigeria. This is in line with the research of Abdurauf (2015) which confirmed that fiscal policy in Nigeria has only a short run effect of human development in the country. This is accounted for by the level of infrastructural decay in the country, with low life expectancy and low standard of living. In Nigeria, the people lack basic social amenities necessary to sustain life despite huge budgetary allocations to infrastructure. The projects are either not executed, executed half way or with the lowest quality of materials. That is why the relationship only exists in the short run.

4.2.11 Fiscal Policy and Human Development In Ghana

In Table 4.10 above, the result of the Johansen Cointegration test shows that the model has at most two (2) cointegrating equations, which suggests a long run relationship. To confirm the long run relationship existing between fiscal policy and poverty reduction in Ghana, the Vector Error Correction Mechanism was adopted. In Appendix IV(b)iv, the ECT_{t-1} (The error correction term) of the VECM shows -0.06037 which confirms that a long run relationship exist between fiscal policy and human development in Ghana for the period under review. But in measuring the statistical significance of the relationship, the f.statistic value shows 0.38471 with f-statistic(Prob.) 0.9168, meaning that the long run relationship existing between fiscal policy and human development index in Ghana is not statistically significant at 5% level of significance. The adjusted r-squared shows a 0.2044 value, which means that the model accounts for only about 20% of the total variation in the model. This conforms to the research of Olotu, Salami, Akeremale, (2015), which concluded that fiscal policy has no significant long run effect on human development. This accounts for the reason why countries in Sub Saharan Africa have low human development index. Despite huge expenditure of education, health and infrastructures, people still lack access to education; life expectancy keeps declining, while standard of living continues to fall in Sub Saharan Africa.

4.2.12 Fiscal Policy and Human Development in Sub Saharan Africa

The Johansen cointegration test for the model of the effect of Fiscal Policy on Human Development Index in Sub Saharan Africa showed the existence of at most (3) three cointegrating equations which suggest that the fiscal policy has a long run effect on Human Development Index in Sub Saharan Africa. The Vector Error Correction Mechanism confirmed that the fiscal policy has a long run effect on human development index with the error correction term assuming a negative coefficient. The f.statistics 0.218 (Prob. 0.9968) indicates that Fiscal Policy has no significant long run effect on Human Development Index in Sub Saharan Africa. The individual explanatory variables do not have significant long run effect on Human Development Index in Sub Saharan Africa.

CHAPTER FIVE

CONCLUSION AND RECOMMENDATIONS

5.0 Preamble

This chapter concentrates on the summary of the major findings of this research, the conclusion drawn from the findings and recommendations made based on the findings.

5.1 Findings

The main findings of this research stem from the objectives of the research and are summarized below:

I. The first objective of this research is to determine the effect of fiscal policy components (Tax Revenue, Oil Revenue, Capital Expenditure, Recurrent Expenditure, deficit financing) on economic growth in Sub Saharan Africa. The result of the analysis as contained in appendix IV(a)i shows that there is a long run significant relationship between fiscal policy and economic growth in both Nigeria and Ghana. The Least squares results also reveal that a unit change in Deficit Financing in Nigeria has a 6.491 negative significant effect on economic growth in Nigeria at 5% significance level. This conforms to existing literature and the a priori expectation of the model of this research work. This is so because both domestic and foreign debts have negative effect on the economy. Government servicing of debts crowds out government spending on infrastructures, other basic amenities and disposable income which negatively affects economic growth. On the other hand, the least squares result in appendix IV(a)i shows that a unit change in recurrent expenditure is associated with a 7.872 unit significant positive effect on economic growth in Nigeria at 5% level of significance. This is also in line with existing literature and the a priori expectation of the model. This is due to the fact that as government recurrent on have a direct positive effect on the disposable income of individuals in the country, which positively affects the individual's savings and consumption. This in turn has a positive multiplier effect on economic growth in the country. Again the result in appendix IV(b)ii reveals that Deficit financing also has a significant negative effect on economic growth in Ghana. This is because government borrowing affects personal income; saving, investment and crowds out government spending which negatively affect economic growth. A unit change in government borrowing in Ghana reduces economic growth by a 0.0044 in the long run at 5% level of significance. Oil revenue in Ghana has a positive significant effect on economic growth in Ghana. Oil revenue in relatively new to Ghana economy and the little revenue generated have significantly impacted positively to economic growth in Ghana. Government revenue impacts on economic growth through spending on infrastructure and enhanced income of individuals. Therefore fiscal policy has a significant effect on economic growth in Sub Saharan Africa.

II. The second objective of this study is to examine the effect of fiscal policy (Tax Revenue, Oil Revenue, Capital Expenditure, Recurrent Expenditure, deficit financing) on Human development in Sub Saharan Africa. The result in appendix IV(a)iv shows a positive speed of adjustment which indicates that the relationship between fiscal policy and Human Development in Nigeria is in the short run. So, the short run least squares result reveals that a significant short run relationship exists between fiscal policy and Human Development in Nigeria. This is confirmed with the f. stat.(12.3919), prob.(0.000004) which is significant at 5% level of significance. But the individual explanatory variables (Tax Revenue, Oil Revenue, Capital Expenditure, Recurrent Expenditure and Deficit Financing) are not statistically significant in explaining the variation in Human development in Nigeria. This accounts for why life expectancy continues to decline, people have little or no access to education coupled with declining low standard of living. In Ghana, the result in appendix IV(b)iv shows that the long run relationship between fiscal policy and Human Development in Ghana is not statistically significant at 5% level of significance with f.stat.(0.3847) and prob.(0.917). Also, the individual explanatory variables (Tax Revenue, Oil Revenue, Capital Expenditure, Recurrent expenditure and Government Deficit) do not have significant long run effect on human development in Ghana. Therefore, the research concludes that fiscal policy has no significant long run effect on human development in Sub Saharan Africa.

III. The third objective is to examine the effect of fiscal policy (Tax Revenue, Oil Revenue, Capital Expenditure, Recurrent Expenditure, deficit financing) on Poverty reduction in the sub Saharan African. In discussing this objective, we refer to the results in appendix IV(a)ii and IV(b)iii. The result in appendix IV(a)ii shows that the relationship between fiscal policy and poverty reduction in Nigeria is a short run relationship and it is not statistically significant at 5% level of significance with f.stat.(2.186) and prob.(0.08798). Tax Revenue has a negative coefficient of -0.01046, t. stat of -2.802 and prob. (0.0097). This means that a unit change in tax revenue reduces poverty by a 0.0105 on average ceteris paribus in the short run. The other individual explanatory variables (Oil Revenue, Capital Expenditure, Recurrent Expenditure and Deficit Financing) are not statistically significant at 5% level of significance in explaining the variation in the model. This accounts for the increase in the number of people living below the poverty line in Nigeria and its continuous increase. But, government fiscal policy is expected to impact on poverty by reducing the number of people living below the poverty line. In the Nigeria of today, the billions of naira spent on programs targeted at reducing poverty only benefit the political elites at the corridors of power. The rich continue to grow rich while the poor wallow in penury.

There is no justifiable increase in income of the individuals in the country, but government expenditure and revenue continue to increase. The money ends up in privates pockets while poverty continues to increase. In the case of Ghana, the long run relationship between fiscal policy and poverty reduction is not statistically significant at 5% level of significance. This is confirmed by the f.stat. value of 1.47727 (prob.0.2243) which is not statistically significant at 5% level of significance in the long run. Deficit Financing has a negative coefficient of -0.00155, t.stat-2.4006 (prob.0.056) which is statistically significant at 5% level of significance in the long run. If government increases borrowing by a unit, poverty reduces by a 0.00155 unit in the long run. This occurs when government borrow to finance projects that benefit the poor. As government finances projects that benefit the poor through borrowing, poverty tend to reduce. In summary, fiscal policy has no significant long run effect on poverty reduction in Sub Saharan Africa.

IV. The forth objective is to examine the effect of fiscal policy (Tax Revenue, Oil Revenue, Capital Expenditure, Recurrent Expenditure, deficit financing) Unemployment in Sub Saharan Africa. We refer to appendixes IV(a)iii and IV(b)i in achieving the fourth objective. The result in appendix IV(a) iii shows that the relationship between fiscal policy and unemployment in Nigeria is a long run relationship, but the long run relationship is not statistically significant at 5% level of significance with the f-stat (1.0689) prob.(0.4292). The individual explanatory variables (Tax Revenue, Oil Revenue, Capital Expenditure and Deficit Financing) are not statistically significant in explaining the variations in the model in the long run at 5% level of significance. If government fiscal policy measures are not significantly impacting of reducing unemployment in Nigeria, one should not wonder why unemployment has become a plague ravaging Nigeria and spreading to other neighboring Sub Saharan African countries. Government spending should increase disposable income, which affects savings and consumption. Savings encourages investment while consumption leads to continuous production by private investors. Both increased investment and continuous production increases the staff strength of the private sector which reduces unemployment. But this does not happen in the Nigerian factor leading to continuous increase in unemployment rate in Nigeria. Appendix IV(b)i shows that there is a long run significant relationship between fiscal policy and unemployment in Ghana. This is confirmed by the f-stat.(2.7979) prob.(0.028) in appendix IV(b)i. this implies that the long run relationship existing between fiscal policy and unemployment in Ghana is statistically significant at 5% level of significance. But the individual explanatory variables (Tax Revenue, Oil Revenue, Recurrent Expenditure, Capital Expenditure and Deficit Financing) are not statistically significant at 5% level of significance. This implies that Ghana has a lot to do in ensuring that these fiscal policy instruments contribute to unemployment reduction in the country. This research therefore, concludes that fiscal policy has no significant short run effect on unemployment in Nigeria, while fiscal policy has a significant long run effect on unemployment in Ghana.

5.2 Conclusion

Based on the findings, the research concludes as follows:

I. Fiscal policy has a significant long run effect on economic growth in Sub Saharan Africa.
II. Fiscal policy has no significant long run effect on human development in Sub Saharan Africa.
III. Fiscal policy has no significant long run effect on poverty reduction in Sub Saharan Africa.

IV. Fiscal policy has no significant short run effect on unemployment in Nigeria, while fiscal policy has a significant long run effect on unemployment in Ghana.

The outcome of this research has revealed the contributions of fiscal policy to the economic development of Sub Saharan Africa with emphasis on Ghana and Nigeria. The results are not impressive and pronounced as expected as fiscal policy instrument (Tax revenue, Oil Revenue, Capital Expenditure, Recurrent Expenditure and Deficit Financing) have not yielded the expected result towards enhancing the economic growth of Sub Saharan Africa. The implication is that Nigeria and Ghana have not fully utilized the instruments of fiscal policy in solving the macro economic problems facing the region. They are yet to exploit the full potentials of fiscal policy by channeling their expenditure toward enhancing the standard of living of the people. This is responsible for high rate of poverty, increasing rate unemployment as people have little access to basic necessities of life; the infrastructures have almost decayed, health facilities are not functional leading to avoidable deaths and declining standard of living. This weakness has reached a point where it threatens to erode the pillars upon which the security of the region rest. It is clear that fiscal policy has not played the expected role in enhancing economic growth in the Sub Saharan Africa.

5.3 Recommendations

Based on the findings and conclusion of this research, the following recommendations are made:

I. There are few recommendations in line with the findings of this research. First the fact that fiscal policy has a significant long run effect on economic growth, underscores the need for effective utilization of the instruments of fiscal policy to enhance the economic growth of the region. If governments channel their spending towards generating and encouraging production, the economy of Sub Saharan Africa will grow faster. The fact that Tax Revenue, Oil Revenue, Capital Expenditure, Recurrent Expenditure do not have significant effects on economic growth in Nigeria, calls for an over hauling of the fiscal system in Nigeria. This simply means that a greater part of the revenue generated and spent in Nigeria do no find its way into the circle of income in the country, but end up stored or spent abroad or in private hands of the political elites. So, there is need to institutionalize the fight against corruption in Nigeria. It is so disappointing that the huge revenue generated and spent as Capital and recurrent expenditures do not significantly impact on the economy in the long run. Again, high indebtedness discourages growth as it has a negative significant long run effect on economic growth in Nigeria and Ghana. This is so because, deficit financing discourages private sector led investment and may lead to capital flight through debt servicing. So government should try and maintain a balanced budget where revenue equals expenditure to discourage borrowing.

II. Also, the fact that fiscal policy has no significant long run effect on human development in Sub Saharan Africa calls for worry. It is obvious that fiscal policy in Sub Saharan Africa do not significantly improve the lives of the citizens. There is urgent need for an increased funding of the critical sectors that impact on the lives of the people such as: education, health, infrastructures and increase of income of the low income earners. This would help grant the citizen access to education, encourage healthy living and longevity as well as enhance the people's standard of living. There is need for the governments of Nigeria and Ghana to pay attention to those elements of expenditure that have direct effect on human development of the people.

III. The result of the analysis revealed that fiscal policy has no significant long run effect on poverty reduction in Sub Saharan Africa. This means that government revenue, expenditure and borrowing have not significantly impacted on reducing poverty in Sun Saharan Africa. Little wonder poverty has continued to increase in Sub Saharan Africa, with Nigeria as the world poverty capital. And poverty is the mother of all crimes. It begets insurgency, corruption, rape, smuggling, drug abuse etc. There is urgent need to tackle this menace of poverty by settle out programs that have direct effect on the people. An increase recurrent expenditure through income (salaries and wages) would benefit the poor the more. Increased funding to the Agricultural sector would help in reducing the poverty rate, as majority of the poor people in Sub Sahara Africa are predominantly farmers. As recurrent expenditure has a positive significant effect on poverty at 10% level of significance in the short run. There is need for a restructured revenue base in Nigeria and Ghana to finance fiscal policy expansion rather than embarking on borrowing which increases the burden on the poor. Government should as well distribute its social welfare program in a way that it would directly benefit the poor. There is also a desire for a sound macroeconomic policy that is robust enough to handle the issue of poverty which will promote productivity that would benefit the poor in Nigeria and Ghana. There should be a law that pronounce death sentence on corrupt politicians in Nigeria, who embezzle the funds meant to provide facilities that better the lives of the poor.

V. Fiscal policy has no significant short run effect on unemployment in Nigeria, while fiscal policy has a significant long run effect on unemployment in Ghana. Therefore, there is an urgent need to increase expenditure on in productive ventures that are labor intensive which would increase employment and improve productive opportunity among the poor and the non-poor in Sub Saharan Africa and ensure that funds for these developmental sectors are properly utilized. Again, there is need to strengthen, criminalize corruption and institutionalize the fight against corruption in Africa. This would tackle the high level of corruption found in public offices in Sub Saharan Africa.

5.4 Suggestion for Further Studies

One of the constraints of this study is that it studied the effect of fiscal policy on economic development of Sub Saharan Africa using Nigeria and Ghana to represent Sub Saharan Africa but could not cover other Sub Saharan African countries. This work recommends that this study be extended to other Sub Saharan African countries to see if the same results would be obtained for those other countries.

5.5 Contributions to Knowledge

This research work has made a lot of contributions to knowledge:

First, this research work did a pair wise combination of fiscal policy by including all the components of fiscal policy instruments (Revenue, Expenditure and Deficit Financing) in a single research. In measuring the effect of fiscal policy in Sub Sahara Africa, Ugwuanya & Ugwunta (2017),Abdurrauf (2015), Babalola & Aminu (2012), Agu (2014), Nwosu & Okafor (2014) and most of other research works reviewed in their study did not apply a pair wise combination of fiscal policy instrument. They did not fully combine the components of fiscal policy. But, this has been resolved in this research work. This can evoke consciousness on the part of new researchers alike to carry out more researches on fiscal policy by combining all components of fiscal policy in their research. The outcome of this research has revealed the contributions of fiscal policy instruments (Tax Revenue, Oil Revenue, Capital Expenditure, Recurrent Expenditure and Deficit Financing) to the economic development of Sub Saharan Africa with emphasis on Ghana and Nigeria.

This research work has incorporated a good level of disaggregation of fiscal policy and economic development proxies in one single study. This work has reviewed the effect of fiscal policy on the disaggregated components of growth and development proxies (Gross Domestic Product, Unemployment, Human Development Index and Poverty Reduction) in Nigeria and Ghana.

The result of the analysis has revealed that Tax Revenue has a significant long run effect on Human Development Index in Sub Saharan Africa. A unit change in Tax Revenue is associated with a 81.85 unit change in Human Development Index in Sub Saharan Africa. So regardless of the country analyzed, healthier and educated citizens with good standard of living will be willing to pay more tax in the future. It is important for policy makers to consider the fact that increase in tax has a long run effect on Human Development Index of any nation. Tax payers who are healthier, with good level of education and standard of living above average will be willing to pay higher tax in the future..

This research work has also revealed that Recurrent Expenditure has significant effect on Poverty Reduction, Unemployment Reduction, Human Development Index and Economic Growth in Ghana at 5% level of significance in the long run. As a unit change in Recurrent Expenditure in Ghana is associated with a -0.83323 unit change in Poverty reduction at 5% level of significant on average ceteris paribus in the long run. Again, a unit change in Recurrent Expenditure in Ghana is associated with a -0.9366 unit change in the reduction of unemployment in the country on average ceteris paribus in the long run at 5% level of significance. Also, a unit change in Recurrent Expenditure has a significant 10.292 effect on enhancement of Human Development in Ghana in the long run on average ceteris paribus. And a unit change in Recurrent Expenditure significantly results to a 0.4746 units change in Gross Domestic Product in Ghana in the long run on average ceteris paribus. This means that governments expansionary fiscal policy targeted at the low income earners have significantly led to the reduction of poverty, reduction in unemployment rate, enhancement of Human development Index and enhancement of economic growth in Ghana. So, for Nigeria to achieve success in the reduction of Poverty and unemployment and enhance Human Development and Economic Growth in the country, there must be timely and adequate expansionary fiscal policy targeted at enhancing the disposable income of the low income earners. This will increase their disposable income, thereby increasing their consumption and savings which will in turn enhance their standard of living, increase their dependents' access to education, elongate their lives, reduce poverty, reduce unemployment and enhance economic growth in Nigeria. This is also another contribution of this study to knowledge.

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APPENDIX

APPENDIX I (a)i: UNIT ROOT RESULTS (NIGERIA) CEXP

Null Hypothesis: D(CEXPN) has a unit root
Exogenous: Constant
Bandwidth: 4 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-7.375046	0.0000
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	20040.79
HAC corrected variance (Bartlett kernel)	20745.06

Phillips-Perron Test Equation
Dependent Variable: D(CEXPN,2)
Method: Least Squares
Date: 10/11/19 Time: 07:17
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CEXPN(-1))	-1.403318	0.189458	-7.407032	0.0000
C	40.85720	27.04413	1.510760	0.1421

R-squared	0.662097	Mean dependent var	11.56200
Adjusted R-squared	0.650029	S.D. dependent var	247.6984
S.E. of regression	146.5342	Akaike info criterion	12.87674
Sum squared resid	601223.7	Schwarz criterion	12.97015
Log likelihood	-191.1510	Hannan-Quinn criter.	12.90662
F-statistic	54.86412	Durbin-Watson stat	1.794231
Prob(F-statistic)	0.000000		

APPENDIX I (a)ii: UNIT ROOT RESULTS (NIGERIA) DEF

Null Hypothesis: D(DEFN) has a unit root
Exogenous: Constant

Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-7.514173	0.0000
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	66180.82
HAC corrected variance (Bartlett kernel)	100240.3

Phillips-Perron Test Equation
Dependent Variable: D(DEFN,2)
Method: Least Squares
Date: 10/11/19 Time: 07:21
Sample (adjusted): 1989 2017
Included observations: 25 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(DEFN(-1)	-1.610965	0.201215	-8.006188	0.0000
C	-78.15780	53.86993	-1.450862	0.1603

R-squared	0.735933	Mean dependent var	-38.49520
Adjusted R-squared	0.724452	S.D. dependent var	510.9439
S.E. of regression	268.2083	Akaike info criterion	14.09802
Sum squared resid	1654520.	Schwarz criterion	14.19553
Log likelihood	-174.2253	Hannan-Quinn criter.	14.12507
F-statistic	64.09905	Durbin-Watson stat	1.195555
Prob(F-statistic)	0.000000		

APPENDIX I (a)iii: UNIT ROOT RESULTS (NIGERIA)GDP

Null Hypothesis: D(GDPN) has a unit root
Exogenous: Constant
Bandwidth: 14 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-8.915169	0.0000
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	2759405.
HAC corrected variance (Bartlett kernel)	919896.0

Phillips-Perron Test Equation
Dependent Variable: D(GDPN)
Method: Least Squares
Date: 10/11/19 Time: 07:22
Sample (adjusted): 1989 2017
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDPN(-1)	-1.422817	0.202276	-7.034045	0.0000
C	525.4058	323.7144	1.623053	0.1162

R-squared	0.646956	Mean dependent var	167.3697
Adjusted R-squared	0.633881	S.D. dependent var	2845.204
S.E. of regression	1721.570	Akaike info criterion	17.80633
Sum squared resid	80022731	Schwarz criterion	17.90063
Log likelihood	-256.1918	Hannan-Quinn criter.	17.83587
F-statistic	49.47779	Durbin-Watson stat	1.761281
Prob(F-statistic)	0.000000		

APPENDIX I (a)iv: UNIT ROOT RESULTS (NIGERIA)HDI

Null Hypothesis: D(HDIN) has a unit root
Exogenous: Constant
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-5.306944	0.0001
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.006264
HAC corrected variance (Bartlett kernel)	0.006253

Phillips-Perron Test Equation
Dependent Variable: D(HDIN,2)
Method: Least Squares
Date: 10/11/19 Time: 07:23
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDIN(-1))	-1.002764	0.188948	-5.307094	0.0000
C	0.017782	0.015325	1.160344	0.2557

R-squared	0.501471	Mean dependent var	6.67E-05
Adjusted R-squared	0.483666	S.D. dependent var	0.114009
S.E. of regression	0.081923	Akaike info criterion	-2.101745
Sum squared resid	0.187916	Schwarz criterion	-2.008332
Log likelihood	33.52617	Hannan-Quinn criter.	-2.071861

F-statistic	28.16524	Durbin-Watson stat	2.000583
Prob(F-statistic)	0.000012		

APPENDIX I (a)v: UNIT ROOT RESULTS (NIGERIA)OREV

Null Hypothesis: D(OREVN) has a unit root
Exogenous: Constant
Bandwidth: 0 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-5.813461	0.0000
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	1733832.
HAC corrected variance (Bartlett kernel)	1733832.

Phillips-Perron Test Equation
Dependent Variable: D(OREVN,2)
Method: Least Squares
Date: 10/11/19 Time: 07:24
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(OREVN(-1))	-1.110113	0.190956	-5.813461	0.0000
C	146.2171	249.4290	0.586207	0.5624

R-squared	0.546899	Mean dependent var	46.83233
Adjusted R-squared	0.530716	S.D. dependent var	1989.608
S.E. of regression	1362.966	Akaike info criterion	17.33705
Sum squared resid	52014956	Schwarz criterion	17.43047
Log likelihood	-258.0558	Hannan-Quinn criter.	17.36694
F-statistic	33.79633	Durbin-Watson stat	2.022288
Prob(F-statistic)	0.000003		

APPENDIX I (a)vi: UNIT ROOT RESULTS (NIGERIA)POVINn

Null Hypothesis: D(POVINN) has a unit root
Exogenous: Constant
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*

Phillips-Perron test statistic		-5.288907	0.0002
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	30.40043
HAC corrected variance (Bartlett kernel)	30.45760

Phillips-Perron Test Equation
Dependent Variable: D(POVINN,2)
Method: Least Squares
Date: 10/11/19 Time: 07:25
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(POVINN(-1))	-1.000982	0.189267	-5.288720	0.0000
C	0.143441	1.042191	0.137634	0.8915

R-squared	0.499737	Mean dependent var	0.033333
Adjusted R-squared	0.481870	S.D. dependent var	7.928705
S.E. of regression	5.707178	Akaike info criterion	6.385667
Sum squared resid	912.0128	Schwarz criterion	6.479080
Log likelihood	-93.78501	Hannan-Quinn criter.	6.415551
F-statistic	27.97056	Durbin-Watson stat	1.986928
Prob(F-statistic)	0.000013		

APPENDIX I (a)vii: UNIT ROOT RESULTS (NIGERIA)REXPn

Null Hypothesis: D(REXPN) has a unit root
Exogenous: Constant
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-7.552258	0.0000
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	173020.8
HAC corrected variance (Bartlett kernel)	156706.6

Phillips-Perron Test Equation
Dependent Variable: D(REXPN,2)
Method: Least Squares
Date: 10/11/19 Time: 07:26

Sample (adjusted): 1989 2017
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(REXPN(-1)	-1.376650	0.185239	-7.431762	0.0000
C	72.29870	80.98781	0.892711	0.3799

R-squared	0.671657	Mean dependent var	-18.97793
Adjusted R-squared	0.659496	S.D. dependent var	738.7634
S.E. of regression	431.0884	Akaike info criterion	15.03698
Sum squared resid	5017604.	Schwarz criterion	15.13127
Log likelihood	-216.0361	Hannan-Quinn criter.	15.06651
F-statistic	55.23109	Durbin-Watson stat	2.187031
Prob(F-statistic)	0.000000		

APPENDIX I (a)viii: UNIT ROOT RESULTS (NIGERIA)TAXREVn

Null Hypothesis: D(TAXREVN) has a unit root
Exogenous: Constant
Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-5.492292	0.0001
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	44652.19
HAC corrected variance (Bartlett kernel)	50457.96

Phillips-Perron Test Equation
Dependent Variable: D(TAXREVN,2)
Method: Least Squares
Date: 10/11/19 Time: 07:27
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(TAXREVN(-1))	-1.036894	0.189143	-5.482060	0.0000
C	110.3840	44.13468	2.501071	0.0185

R-squared	0.517682	Mean dependent var	7.363667
Adjusted R-squared	0.500456	S.D. dependent var	309.4684
S.E. of regression	218.7273	Akaike info criterion	13.67787
Sum squared resid	1339566.	Schwarz criterion	13.77128
Log likelihood	-203.1680	Hannan-Quinn criter.	13.70775
F-statistic	30.05298	Durbin-Watson stat	1.984217
Prob(F-statistic)	0.000007		

APPENDIX I (a)ix: UNIT ROOT RESULTS (NIGERIA)UNPn

Null Hypothesis: D(UNPN) has a unit root
Exogenous: Constant
Bandwidth: 7 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-7.294710	0.0000
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	16.97176
HAC corrected variance (Bartlett kernel)	9.074097

Phillips-Perron Test Equation
Dependent Variable: D(UNPN,2)
Method: Least Squares
Date: 10/11/19 Time: 07:30
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(UNPN(-1))	-1.227781	0.186303	-6.590240	0.0000
C	0.411501	0.780170	0.527450	0.6020

R-squared	0.608015	Mean dependent var	0.080000
Adjusted R-squared	0.594015	S.D. dependent var	6.692528
S.E. of regression	4.264273	Akaike info criterion	5.802761
Sum squared resid	509.1528	Schwarz criterion	5.896174
Log likelihood	-85.04142	Hannan-Quinn criter.	5.832645
F-statistic	43.43126	Durbin-Watson stat	2.049941
Prob(F-statistic)	0.000000		

APPENDIX I (b)i: UNIT ROOT RESULT (GHANA) CEXP

CAPITAL EXPENDITURE
Null Hypothesis: D(CEXPG) has a unit root
Exogenous: Constant
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.490875	0.0000
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	18.21045
HAC corrected variance (Bartlett kernel)	17.41068

Phillips-Perron Test Equation
Dependent Variable: D(CEXPG,2)
Method: Least Squares
Date: 10/11/19 Time: 01:30
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CEXPG(-1))	-1.181900	0.182868	-6.463125	0.0000
C	0.047282	0.806723	0.058610	0.9537

R-squared	0.598693	Mean dependent var	-0.086667
Adjusted R-squared	0.584360	S.D. dependent var	6.851465
S.E. of regression	4.417148	Akaike info criterion	5.873206
Sum squared resid	546.3135	Schwarz criterion	5.966619
Log likelihood	-86.09809	Hannan-Quinn criter.	5.903090
F-statistic	41.77198	Durbin-Watson stat	2.067713
Prob(F-statistic)	0.000001		

APPENDIX I (b)ii: UNIT ROOT RESULT (GHANA) DEFICIT FINANCING:

Null Hypothesis: D(DEFG) has a unit root
Exogenous: Constant
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.285606	0.0000
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	658289.3
HAC corrected variance (Bartlett kernel)	642805.3

Phillips-Perron Test Equation
Dependent Variable: D(DEFG,2)
Method: Least Squares
Date: 10/11/19 Time: 01:34
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(DEFG(-1))	-1.225487	0.195210	-6.277781	0.0000
C	-102.3212	155.0747	-0.659819	0.5148

R-squared	0.584635	Mean dependent var	43.26667

Adjusted R-squared	0.569800	S.D. dependent var	1280.427
S.E. of regression	839.8274	Akaike info criterion	16.36861
Sum squared resid	19748679	Schwarz criterion	16.46202
Log likelihood	-243.5292	Hannan-Quinn criter.	16.39849
F-statistic	39.41054	Durbin-Watson stat	1.986674
Prob(F-statistic)	0.000001		

APPENDIX I (b)iii: UNIT ROOT RESULT (GHANA) GDP

Null Hypothesis: D(GDPG) has a unit root
Exogenous: Constant
Bandwidth: 0 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.107638	0.0000
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	25.32943
HAC corrected variance (Bartlett kernel)	25.32943

Phillips-Perron Test Equation
Dependent Variable: D(GDPG,2)
Method: Least Squares
Date: 10/11/19 Time: 01:36
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDPG(-1))	-1.142135	0.187001	-6.107638	0.0000
C	2.030386	0.999453	2.031498	0.0518

R-squared	0.571231	Mean dependent var	0.155000
Adjusted R-squared	0.555918	S.D. dependent var	7.817406
S.E. of regression	5.209479	Akaike info criterion	6.203177
Sum squared resid	759.8829	Schwarz criterion	6.296591
Log likelihood	-91.04766	Hannan-Quinn criter.	6.233061
F-statistic	37.30324	Durbin-Watson stat	2.022053
Prob(F-statistic)	0.000001		

APPENDIX I (b)iv: UNIT ROOT RESULT (GHANA) HDI

Null Hypothesis: D(HDIG) has a unit root
Exogenous: Constant
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-5.455940	0.0001
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.007637
HAC corrected variance (Bartlett kernel)	0.007618

Phillips-Perron Test Equation
Dependent Variable: D(HDIG,2)
Method: Least Squares
Date: 10/11/19 Time: 01:38
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDIG(-1))	-1.030288	0.188837	-5.455957	0.0000
C	0.020327	0.016925	1.200999	0.2398

R-squared	0.515298	Mean dependent var	0.000133
Adjusted R-squared	0.497987	S.D. dependent var	0.127671
S.E. of regression	0.090459	Akaike info criterion	-1.903508
Sum squared resid	0.229117	Schwarz criterion	-1.810095
Log likelihood	30.55262	Hannan-Quinn criter.	-1.873624
F-statistic	29.76747	Durbin-Watson stat	2.002148
Prob(F-statistic)	0.000008		

APPENDIX I (b)v: UNIT ROOT RESULT (GHANA) OREV

Null Hypothesis: D(OREVG) has a unit root
Exogenous: Constant
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-4.644390	0.0008
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	292052.3
HAC corrected variance (Bartlett kernel)	293345.8

Phillips-Perron Test Equation
Dependent Variable: D(OREVG,2)
Method: Least Squares
Date: 10/11/19 Time: 01:39
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(OREVG(-1))	-0.879682	0.189484	-4.642502	0.0001
C	70.12059	103.6226	0.676692	0.5042

R-squared	0.434946	Mean dependent var	-11.25000
Adjusted R-squared	0.414766	S.D. dependent var	731.2185
S.E. of regression	559.3865	Akaike info criterion	15.55590
Sum squared resid	8761570.	Schwarz criterion	15.64931
Log likelihood	-231.3385	Hannan-Quinn criter.	15.58578
F-statistic	21.55283	Durbin-Watson stat	1.977039
Prob(F-statistic)	0.000074		

APPENDIX I (b)vi: UNIT ROOT RESULT (GHANA) POV

Null Hypothesis: D(POVG) has a unit root
Exogenous: Constant
Bandwidth: 4 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-4.524522	0.0012
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	6.149866
HAC corrected variance (Bartlett kernel)	5.238291

Phillips-Perron Test Equation
Dependent Variable: D(POVG,2)
Method: Least Squares
Date: 10/11/19 Time: 01:40
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(POVG(-1))	-0.855170	0.186838	-4.577081	0.0001
C	-0.529527	0.481949	-1.098721	0.2812

R-squared	0.427984	Mean dependent var	-0.015000
Adjusted R-squared	0.407555	S.D. dependent var	3.334958
S.E. of regression	2.566933	Akaike info criterion	4.787641
Sum squared resid	184.4960	Schwarz criterion	4.881054

Log likelihood	-69.81461	Hannan-Quinn criter.	4.817524
F-statistic	20.94967	Durbin-Watson stat	1.971475
Prob(F-statistic)	0.000088		

APPENDIX I (b)vii: UNIT ROOT RESULT (GHANA) REXP

Null Hypothesis: D(REXPG) has a unit root
Exogenous: Constant
Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-5.110498	0.0002
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	18.41929
HAC corrected variance (Bartlett kernel)	27.47701

Phillips-Perron Test Equation
Dependent Variable: D(REXPG,2)
Method: Least Squares
Date: 10/11/19 Time: 01:41
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(REXPG(-1))	-0.919206	0.187330	-4.906881	0.0000
C	-2.050570	0.918700	-2.232035	0.0338

R-squared	0.462340	Mean dependent var	0.066667
Adjusted R-squared	0.443137	S.D. dependent var	5.953112
S.E. of regression	4.442404	Akaike info criterion	5.884609
Sum squared resid	552.5787	Schwarz criterion	5.978022
Log likelihood	-86.26913	Hannan-Quinn criter.	5.914492
F-statistic	24.07748	Durbin-Watson stat	2.076492
Prob(F-statistic)	0.000036		

APPENDIX I (b)viii: UNIT ROOT RESULT (GHANA) TAXREV

Null Hypothesis: D(TAXREVG) has a unit root
Exogenous: Constant
Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-4.544339	0.0011
Test critical values:	1% level	-3.670170	

	5% level	-2.963972
	10% level	-2.621007

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	1.876270
HAC corrected variance (Bartlett kernel)	1.762503

Phillips-Perron Test Equation
Dependent Variable: D(TAXREVG,2)
Method: Least Squares
Date: 10/11/19 Time: 01:42
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(TAXREVG(-1))	-1.039521	0.225843	-4.602856	0.0001
C	0.446283	0.264631	1.686435	0.1028

R-squared	0.430736	Mean dependent var	0.193333
Adjusted R-squared	0.410405	S.D. dependent var	1.846513
S.E. of regression	1.417847	Akaike info criterion	3.600496
Sum squared resid	56.28811	Schwarz criterion	3.693909
Log likelihood	-52.00744	Hannan-Quinn criter.	3.630380
F-statistic	21.18628	Durbin-Watson stat	1.704665
Prob(F-statistic)	0.000082		

APPENDIX I (b)ix: UNIT ROOT RESULT (GHANA) UNP

Null Hypothesis: D(UNPG) has a unit root
Exogenous: Constant
Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.450291	0.0000
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.389248
HAC corrected variance (Bartlett kernel)	0.321561

Phillips-Perron Test Equation
Dependent Variable: D(UNPG,2)
Method: Least Squares
Date: 10/11/19 Time: 01:44
Sample (adjusted): 1989 2017
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(UNPG(-1),2)	-1.194060	0.188868	-6.322202	0.0000
C	0.024396	0.120171	0.203011	0.8406

R-squared	0.596836	Mean dependent var	-0.006897
Adjusted R-squared	0.581904	S.D. dependent var	0.999983
S.E. of regression	0.646592	Akaike info criterion	2.032270
Sum squared resid	11.28820	Schwarz criterion	2.126567
Log likelihood	-27.46792	Hannan-Quinn criter.	2.061803
F-statistic	39.97024	Durbin-Watson stat	2.054539
Prob(F-statistic)	0.000001		

APPENDIX I (c)i: UNIT ROOT RESULT (SUB SAHARAN AFRICA) CEXP

Null Hypothesis: D(CEXPS) has a unit root
Exogenous: Constant
Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-7.531156	0.0000
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	4956.793
HAC corrected variance (Bartlett kernel)	5085.958

Phillips-Perron Test Equation
Dependent Variable: D(CEXPS,2)
Method: Least Squares
Date: 02/06/20 Time: 16:54
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(CEXPS(-1))	-1.422259	0.188190	-7.557585	0.0000
C	20.66356	13.45098	1.536213	0.1357

R-squared	0.671041	Mean dependent var	5.737667
Adjusted R-squared	0.659293	S.D. dependent var	124.8508
S.E. of regression	72.87557	Akaike info criterion	11.47972
Sum squared resid	148703.8	Schwarz criterion	11.57314
Log likelihood	-170.1959	Hannan-Quinn criter.	11.50961
F-statistic	57.11709	Durbin-Watson stat	1.784487
Prob(F-statistic)	0.000000		

APPENDIX I (c)ii: UNIT ROOT RESULT (SUB SAHARAN AFRICA) DEF

Null Hypothesis: D(DEFS) has a unit root
Exogenous: Constant
Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-5.670965	0.0001
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	157845.9
HAC corrected variance (Bartlett kernel)	102286.0

Phillips-Perron Test Equation
Dependent Variable: D(DEFS,2)
Method: Least Squares
Date: 02/06/20 Time: 16:56
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(DEFS(-1))	-1.041525	0.188464	-5.526395	0.0000
C	-102.9827	77.23434	-1.333379	0.1932

R-squared	0.521703	Mean dependent var	-2.927333
Adjusted R-squared	0.504621	S.D. dependent var	584.2914
S.E. of regression	411.2427	Akaike info criterion	14.94058
Sum squared resid	4735376.	Schwarz criterion	15.03400
Log likelihood	-222.1088	Hannan-Quinn criter.	14.97047
F-statistic	30.54105	Durbin-Watson stat	2.038579
Prob(F-statistic)	0.000007		

APPENDIX I (c)iii: UNIT ROOT RESULT (SUB SAHARAN AFRICA) GDP

Null Hypothesis: D(GDPS_$) has a unit root
Exogenous: Constant
Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-3.533157	0.0139
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	6413.775
HAC corrected variance (Bartlett kernel)	6008.793

Phillips-Perron Test Equation
Dependent Variable: D(GDPS_$,2)
Method: Least Squares
Date: 02/06/20 Time: 16:57
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDPS_$(-1))	-0.647363	0.180574	-3.585022	0.0013
C	31.27109	17.03641	1.835544	0.0771

R-squared	0.314605	Mean dependent var	3.230800
Adjusted R-squared	0.290127	S.D. dependent var	98.38936
S.E. of regression	82.89693	Akaike info criterion	11.73741
Sum squared resid	192413.2	Schwarz criterion	11.83083
Log likelihood	-174.0612	Hannan-Quinn criter.	11.76730
F-statistic	12.85238	Durbin-Watson stat	1.844480
Prob(F-statistic)	0.001263		

APPENDIX I (c)iv: UNIT ROOT RESULT (SUB SAHARAN AFRICA) HDI

Null Hypothesis: D(HDI) has a unit root
Exogenous: Constant
Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-5.581099	0.0001
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.005082
HAC corrected variance (Bartlett kernel)	0.004816

Phillips-Perron Test Equation
Dependent Variable: D(HDI,2)
Method: Least Squares
Date: 02/06/20 Time: 17:03
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(HDI(-1))	-1.051936	0.188649	-5.576167	0.0000

C	0.018893	0.013886	1.360578	0.1845

R-squared	0.526176	Mean dependent var	0.000133
Adjusted R-squared	0.509253	S.D. dependent var	0.105335
S.E. of regression	0.073790	Akaike info criterion	-2.310838
Sum squared resid	0.152460	Schwarz criterion	-2.217425
Log likelihood	36.66257	Hannan-Quinn criter.	-2.280955
F-statistic	31.09364	Durbin-Watson stat	2.007163
Prob(F-statistic)	0.000006		

APPENDIX I (c)v: UNIT ROOT RESULT (SUB SAHARAN AFRICA) OREV

Null Hypothesis: D(OREVS) has a unit root
Exogenous: Constant
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-5.212742	0.0002
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	673497.1
HAC corrected variance (Bartlett kernel)	675161.9

Phillips-Perron Test Equation
Dependent Variable: D(OREVS,2)
Method: Least Squares
Date: 02/06/20 Time: 17:04
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(OREVS(-1))	-0.989510	0.189838	-5.212380	0.0000
C	107.8498	156.0512	0.691118	0.4952

R-squared	0.492468	Mean dependent var	17.79117
Adjusted R-squared	0.474342	S.D. dependent var	1171.649
S.E. of regression	849.4728	Akaike info criterion	16.39145
Sum squared resid	20204914	Schwarz criterion	16.48486
Log likelihood	-243.8717	Hannan-Quinn criter.	16.42133
F-statistic	27.16891	Durbin-Watson stat	1.984900
Prob(F-statistic)	0.000016		

APPENDIX I (c)vi: UNIT ROOT RESULT (SUB SAHARAN AFRICA) POV

Null Hypothesis: D(POVS__) has a unit root
Exogenous: Constant

Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-5.743116	0.0000
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	11.99475
HAC corrected variance (Bartlett kernel)	15.50811

Phillips-Perron Test Equation
Dependent Variable: D(POVS__,2)
Method: Least Squares
Date: 02/06/20 Time: 17:04
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(POVS__(-1))	-1.079565	0.188384	-5.730649	0.0000
C	0.207239	0.655782	0.316018	0.7543

R-squared	0.539779	Mean dependent var	-0.026667
Adjusted R-squared	0.523343	S.D. dependent var	5.192470
S.E. of regression	3.584901	Akaike info criterion	5.455679
Sum squared resid	359.8425	Schwarz criterion	5.549093
Log likelihood	-79.83519	Hannan-Quinn criter.	5.485563
F-statistic	32.84034	Durbin-Watson stat	1.915368
Prob(F-statistic)	0.000004		

APPENDIX I (c)vii: UNIT ROOT RESULT (SUB SAHARAN AFRICA) REXP

Null Hypothesis: D(REXPS) has a unit root
Exogenous: Constant, Linear Trend
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-3.657253	0.0415
Test critical values:	1% level	-4.296729	
	5% level	-3.568379	
	10% level	-3.218382	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	32157.99
HAC corrected variance (Bartlett kernel)	33110.91

Phillips-Perron Test Equation

Dependent Variable: D(REXPS,2)
Method: Least Squares
Date: 02/06/20 Time: 17:05
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(REXPS(-1))	-0.729419	0.201151	-3.626223	0.0012
C	-92.85455	76.31430	-1.216739	0.2342
@TREND("1986")	11.20094	4.560192	2.456242	0.0208

R-squared	0.337977	Mean dependent var	22.83750
Adjusted R-squared	0.288938	S.D. dependent var	224.1658
S.E. of regression	189.0267	Akaike info criterion	13.41629
Sum squared resid	964739.7	Schwarz criterion	13.55641
Log likelihood	-198.2444	Hannan-Quinn criter.	13.46112
F-statistic	6.892033	Durbin-Watson stat	1.905150
Prob(F-statistic)	0.003818		

APPENDIX I (c)viii: UNIT ROOT RESULT (SUB SAHARAN AFRICA) TAXREV

Null Hypothesis: D(TAXREVS) has a unit root
Exogenous: Constant
Bandwidth: 2 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-5.492278	0.0001
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	11190.47
HAC corrected variance (Bartlett kernel)	12634.21

Phillips-Perron Test Equation
Dependent Variable: D(TAXREVS,2)
Method: Least Squares
Date: 02/06/20 Time: 17:08
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(TAXREVS(-1))	-1.037186	0.189195	-5.482106	0.0000
C	55.42934	22.10041	2.508068	0.0182

R-squared	0.517686	Mean dependent var	3.778500
Adjusted R-squared	0.500461	S.D. dependent var	154.9248
S.E. of regression	109.4979	Akaike info criterion	12.29403
Sum squared resid	335714.0	Schwarz criterion	12.38744
Log likelihood	-182.4104	Hannan-Quinn criter.	12.32391
F-statistic	30.05349	Durbin-Watson stat	1.983727
Prob(F-statistic)	0.000007		

APPENDIX I (c)ix: UNIT ROOT RESULT (SUB SAHARAN AFRICA) UNP

Null Hypothesis: D(UNPS__) has a unit root
Exogenous: Constant
Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-3.644108	0.0107
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.162443
HAC corrected variance (Bartlett kernel)	0.149899

Phillips-Perron Test Equation
Dependent Variable: D(UNPS__,2)
Method: Least Squares
Date: 02/06/20 Time: 17:09
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(UNPS__(-1))	-0.672525	0.181578	-3.703773	0.0009
C	-0.028764	0.076267	-0.377151	0.7089

R-squared	0.328826	Mean dependent var	-0.014345
Adjusted R-squared	0.304855	S.D. dependent var	0.500373
S.E. of regression	0.417188	Akaike info criterion	1.153781
Sum squared resid	4.873284	Schwarz criterion	1.247194
Log likelihood	-15.30672	Hannan-Quinn criter.	1.183665
F-statistic	13.71793	Durbin-Watson stat	1.801368
Prob(F-statistic)	0.000924		

APPENDIX II (a)i: JOHANSON COINTEGRATION RESULTS (NIGERIA) POVIN

Date: 10/11/19 Time: 07:34
Sample (adjusted): 1988 2017
Included observations: 27 after adjustments
Trend assumption: Linear deterministic trend
Series: CEXPN DEFN OREVN REXPN TAXREVN
Exogenous series: POVINN
Warning: Critical values assume no exogenous series
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.906087	142.9331	69.81889	0.0000
At most 1 *	0.770125	79.06765	47.85613	0.0000
At most 2 *	0.586985	39.37175	29.79707	0.0029
At most 3 *	0.331861	15.49643	15.49471	0.0500
At most 4 *	0.156910	4.608418	3.841466	0.0318

Trace test indicates 5 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.906087	63.86544	33.87687	0.0000
At most 1 *	0.770125	39.69590	27.58434	0.0009
At most 2 *	0.586985	23.87532	21.13162	0.0200
At most 3	0.331861	10.88801	14.26460	0.1599
At most 4 *	0.156910	4.608418	3.841466	0.0318

Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

CEXPN	DEFN	OREVN	REXPN	TAXREVN
-0.002189	-0.000533	-0.000655	-0.003959	0.007001
0.007001	0.007735	-0.002012	0.012411	-0.010124
-0.004830	-0.006126	0.001577	-0.005498	0.000590
0.001917	-0.009715	-0.000522	0.002408	-0.005525
-0.010854	0.004386	0.000233	0.003299	0.000227

Unrestricted Adjustment Coefficients (alpha):

D(CEXPN)	-62.54665	54.52622	23.76985	-10.38725	14.47730
D(DEFN)	-12.27615	-52.38739	40.65179	18.90743	-43.49915
D(OREVN)	28.95100	243.8276	235.6000	-165.2886	-155.9212
D(REXPN)	-133.0288	16.89307	-51.37802	-78.22541	16.91588
D(TAXREVN)	-137.5150	21.37469	-18.60325	47.78829	-19.34711

1 Cointegrating Equation(s): Log likelihood -849.9023

Normalized cointegrating coefficients (standard error in parentheses)

CEXPN	DEFN	OREVN	REXPN	TAXREVN
1.000000	0.243359	0.299156	1.808210	-3.197410
	(0.48828)	(0.07109)	(0.44626)	(0.38453)

Adjustment coefficients (standard error in parentheses)

D(CEXPN)	0.136943
	(0.04169)
D(DEFN)	0.026878

	(0.07020)
D(OREVN)	-0.063387
	(0.32128)
D(REXPN)	0.291261
	(0.08248)
D(TAXREVN)	0.301083
	(0.05596)

2 Cointegrating Equation(s): Log likelihood -830.0543

Normalized cointegrating coefficients (standard error in parentheses)

CEXPN	DEFN	OREVN	REXPN	TAXREVN
1.000000	0.000000	0.464856	1.818219	-3.692136
		(0.07712)	(0.46226)	(0.49233)
0.000000	1.000000	-0.680887	-0.041128	2.032907
		(0.07848)	(0.47044)	(0.50104)

Adjustment coefficients (standard error in parentheses)

D(CEXPN)	0.518687	0.455111
	(0.10532)	(0.11132)
D(DEFN)	-0.339892	-0.398699
	(0.21804)	(0.23047)
D(OREVN)	1.643676	1.870691
	(0.99512)	(1.05186)
D(REXPN)	0.409531	0.201556
	(0.27488)	(0.29055)
D(TAXREVN)	0.450729	0.238614
	(0.18399)	(0.19448)

3 Cointegrating Equation(s): Log likelihood -818.1167

Normalized cointegrating coefficients (standard error in parentheses)

CEXPN	DEFN	OREVN	REXPN	TAXREVN
1.000000	0.000000	0.000000	5.859362	-10.07574
			(2.40510)	(3.12335)
0.000000	1.000000	0.000000	-5.960299	11.38314
			(3.47757)	(4.51610)
0.000000	0.000000	1.000000	-8.693320	13.73242
			(5.26792)	(6.84111)

Adjustment coefficients (standard error in parentheses)

D(CEXPN)	0.403868	0.309488	-0.031279
	(0.11665)	(0.13124)	(0.03505)
D(DEFN)	-0.536258	-0.647747	0.177578
	(0.24788)	(0.27890)	(0.07449)
D(OREVN)	0.505622	0.427319	-0.138106
	(1.09284)	(1.22957)	(0.32840)
D(REXPN)	0.657710	0.516317	-0.027890
	(0.31242)	(0.35150)	(0.09388)
D(TAXREVN)	0.540591	0.352585	0.017717
	(0.21708)	(0.24425)	(0.06523)

4 Cointegrating Equation(s): Log likelihood -812.6727

Normalized cointegrating coefficients (standard error in parentheses)

CEXPN	DEFN	OREVN	REXPN	TAXREVN
1.000000	0.000000	0.000000	0.000000	0.739587
				(0.17553)

0.000000	1.000000	0.000000	0.000000	0.381504
				(0.03992)
0.000000	0.000000	1.000000	0.000000	-2.313876
				(0.11275)
0.000000	0.000000	0.000000	1.000000	-1.845819
				(0.09986)

Adjustment coefficients (standard error in parentheses)

D(CEXPN)	0.383960	0.410402	-0.025854	0.768666
	(0.11746)	(0.18106)	(0.03515)	(0.18741)
D(DEFN)	-0.500021	-0.831435	0.167704	-0.779578
	(0.25070)	(0.38645)	(0.07503)	(0.40001)
D(OREVN)	0.188836	2.033115	-0.051786	1.218249
	(1.06534)	(1.64223)	(0.31884)	(1.69983)
D(REXPN)	0.507786	1.276285	0.012962	0.830440
	(0.27608)	(0.42559)	(0.08263)	(0.44051)
D(TAXREVN)	0.632181	-0.111684	-0.007240	1.027070
	(0.19914)	(0.30697)	(0.05960)	(0.31774)

APPENDIX II (a)ii: JOHANSON COINTEGRATION RESULTS (NIGERIA) UNPn

UNPn

Date: 10/11/19 Time: 07:37
Sample (adjusted): 1988 2017
Included observations: 27 after adjustments
Trend assumption: Linear deterministic trend
Series: DEFN CEXPN OREVN REXPN TAXREVN
Exogenous series: UNPN
Warning: Critical values assume no exogenous series
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.890103	149.6706	69.81889	0.0000
At most 1 *	0.874456	90.04883	47.85613	0.0000
At most 2 *	0.521404	34.02112	29.79707	0.0154
At most 3	0.381306	14.12484	15.49471	0.0796
At most 4	0.042086	1.160940	3.841466	0.2813

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.890103	59.62178	33.87687	0.0000
At most 1 *	0.874456	56.02771	27.58434	0.0000
At most 2	0.521404	19.89628	21.13162	0.0737
At most 3	0.381306	12.96390	14.26460	0.0794
At most 4	0.042086	1.160940	3.841466	0.2813

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

DEFN	CEXPN	OREVN	REXPN	TAXREVN
0.004563	-0.000980	-0.001680	0.006174	-0.002154
0.004789	0.003433	-0.000645	0.011204	-0.011912
0.006645	0.007181	-0.001989	0.007373	-0.002508
-0.007925	0.010033	-0.000639	0.000623	-0.005254
-0.007654	-0.010852	-0.000334	0.002402	-0.001465

Unrestricted Adjustment Coefficients (alpha):

D(DEFN)	-59.63031	-31.35730	-43.04873	51.33055	-15.97598
D(CEXPN)	28.15347	85.05213	-23.57967	-20.20240	6.232019
D(OREVN)	340.2360	83.63529	-207.6823	53.73435	-79.35005
D(REXPN)	-18.75712	99.59490	25.62921	-94.66692	-3.877014
D(TAXREVN)	-96.36074	108.9866	21.74093	60.40654	-2.948834

1 Cointegrating Equation(s): Log likelihood -852.9853

Normalized cointegrating coefficients (standard error in parentheses)

DEFN	CEXPN	OREVN	REXPN	TAXREVN
1.000000	-0.214732	-0.368228	1.352869	-0.472073
	(0.28681)	(0.04482)	(0.22960)	(0.23572)

Adjustment coefficients (standard error in parentheses)

D(DEFN)	-0.272122
	(0.14082)
D(CEXPN)	0.128478
	(0.11193)
D(OREVN)	1.552661
	(0.53608)
D(REXPN)	-0.085598
	(0.20003)
D(TAXREVN)	-0.439741
	(0.16690)

2 Cointegrating Equation(s): Log likelihood -824.9714

Normalized cointegrating coefficients (standard error in parentheses)

DEFN	CEXPN	OREVN	REXPN	TAXREVN
1.000000	0.000000	-0.314389	1.580271	-0.936642
		(0.03433)	(0.18257)	(0.17482)
0.000000	1.000000	0.250727	1.059003	-2.163481
		(0.06564)	(0.34906)	(0.33424)

Adjustment coefficients (standard error in parentheses)

D(DEFN)	-0.422303	-0.049204
	(0.19851)	(0.10712)
D(CEXPN)	0.535824	0.264361
	(0.09831)	(0.05305)
D(OREVN)	1.953221	-0.046320
	(0.76669)	(0.41371)
D(REXPN)	0.391399	0.360250
	(0.24747)	(0.13354)
D(TAXREVN)	0.082236	0.468534

	(0.17656)	(0.09528)

3 Cointegrating Equation(s):	Log likelihood	-815.0233

Normalized cointegrating coefficients (standard error in parentheses)

DEFN	CEXPN	OREVN	REXPN	TAXREVN
1.000000	0.000000	0.000000	3.564245	-4.495388
			(0.45247)	(0.58898)
0.000000	1.000000	0.000000	-0.523225	0.674634
			(0.29346)	(0.38200)
0.000000	0.000000	1.000000	6.310566	-11.31955
			(1.38095)	(1.79760)

Adjustment coefficients (standard error in parentheses)

D(DEFN)	-0.708341	-0.358339	0.206063
	(0.26568)	(0.22724)	(0.07602)
D(CEXPN)	0.379148	0.095035	-0.055270
	(0.12978)	(0.11100)	(0.03713)
D(OREVN)	0.573273	-1.537697	-0.212568
	(0.99057)	(0.84723)	(0.28342)
D(REXPN)	0.561692	0.544294	-0.083708
	(0.34638)	(0.29626)	(0.09911)
D(TAXREVN)	0.226694	0.624657	0.048373
	(0.24584)	(0.21026)	(0.07034)

4 Cointegrating Equation(s):	Log likelihood	-808.5413

Normalized cointegrating coefficients (standard error in parentheses)

DEFN	CEXPN	OREVN	REXPN	TAXREVN
1.000000	0.000000	0.000000	0.000000	0.631835
				(0.05779)
0.000000	1.000000	0.000000	0.000000	-0.078033
				(0.03627)
0.000000	0.000000	1.000000	0.000000	-2.241704
				(0.11389)
0.000000	0.000000	0.000000	1.000000	-1.438516
				(0.03399)

Adjustment coefficients (standard error in parentheses)

D(DEFN)	-1.115144	0.156638	0.173253	-1.004852
	(0.31641)	(0.33102)	(0.07108)	(0.38087)
D(CEXPN)	0.539255	-0.107647	-0.042358	0.940276
	(0.16012)	(0.16751)	(0.03597)	(0.19273)
D(OREVN)	0.147420	-0.998604	-0.246914	1.539907
	(1.28816)	(1.34764)	(0.28936)	(1.55056)
D(REXPN)	1.311942	-0.405457	-0.023199	1.129983
	(0.36689)	(0.38383)	(0.08241)	(0.44163)
D(TAXREVN)	-0.252037	1.230689	0.009763	0.824061
	(0.27326)	(0.28588)	(0.06138)	(0.32892)

APPENDIX II (a)iii: JOHANSON COINTEGRATION RESULTS (NIGERIA) HDI

Date: 10/11/19 Time: 07:44
Sample (adjusted): 1988 2017
Included observations: 27 after adjustments
Trend assumption: Linear deterministic trend
Series: CEXPN DEFN OREVN TAXREVN REXPN
Exogenous series: HDIN

Warning: Critical values assume no exogenous series
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.940839	171.3325	69.81889	0.0000
At most 1 *	0.873246	94.99012	47.85613	0.0000
At most 2 *	0.637309	39.22134	29.79707	0.0031
At most 3	0.299344	11.83787	15.49471	0.1649
At most 4	0.079374	2.232936	3.841466	0.1351

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.940839	76.34233	33.87687	0.0000
At most 1 *	0.873246	55.76877	27.58434	0.0000
At most 2 *	0.637309	27.38348	21.13162	0.0058
At most 3	0.299344	9.604931	14.26460	0.2392
At most 4	0.079374	2.232936	3.841466	0.1351

Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

CEXPN	DEFN	OREVN	TAXREVN	REXPN
-0.003752	0.002059	0.001517	0.004958	-0.002841
0.004594	0.002524	-4.44E-05	-0.010706	0.008068
0.006434	0.010551	-0.002383	-0.004978	0.011250
0.011224	-0.006871	-0.000885	-0.002572	-0.001140
-8.47E-05	0.010808	0.001333	0.008049	-0.004704

Unrestricted Adjustment Coefficients (alpha):

D(CEXPN)	-32.50674	80.13559	10.33759	-34.58362	-1.688967
D(DEFN)	0.469165	-2.657687	-75.38656	56.78921	-12.54845
D(OREVN)	-546.0356	122.2165	-54.24308	110.4004	-35.18048
D(TAXREVN)	77.87504	129.6152	-2.116181	45.87522	-8.601045
D(REXPN)	-66.88577	91.82785	26.12429	-39.50991	30.62057

1 Cointegrating Equation(s): Log likelihood -837.0510

Normalized cointegrating coefficients (standard error in parentheses)

CEXPN	DEFN	OREVN	TAXREVN	REXPN
1.000000	-0.548739	-0.404272	-1.321581	0.757303
	(0.25920)	(0.03665)	(0.18952)	(0.19748)

Adjustment coefficients (standard error in parentheses)

D(CEXPN)	0.121961
	(0.09278)
D(DEFN)	-0.001760
	(0.12674)
D(OREVN)	2.048656
	(0.26777)
D(TAXREVN)	-0.292177
	(0.14297)
D(REXPN)	0.250947
	(0.14412)

2 Cointegrating Equation(s): Log likelihood -809.1666

Normalized cointegrating coefficients (standard error in parentheses)

CEXPN	DEFN	OREVN	TAXREVN	REXPN
1.000000	0.000000	-0.207085	-1.825770	1.256507
		(0.02914)	(0.14929)	(0.14208)
0.000000	1.000000	0.359346	-0.918814	0.909729
		(0.05307)	(0.27193)	(0.25880)

Adjustment coefficients (standard error in parentheses)

D(CEXPN)	0.490099	0.135327
	(0.09810)	(0.05387)
D(DEFN)	-0.013969	-0.005742
	(0.20034)	(0.11001)
D(OREVN)	2.610111	-0.815719
	(0.38928)	(0.21377)
D(TAXREVN)	0.303266	0.487461
	(0.14134)	(0.07762)
D(REXPN)	0.672798	0.094057
	(0.19052)	(0.10462)

3 Cointegrating Equation(s): Log likelihood -795.4748

Normalized cointegrating coefficients (standard error in parentheses)

CEXPN	DEFN	OREVN	TAXREVN	REXPN
1.000000	0.000000	0.000000	-2.529896	1.531670
			(0.23495)	(0.18049)
0.000000	1.000000	0.000000	0.303030	0.432250
			(0.15810)	(0.12145)
0.000000	0.000000	1.000000	-3.400188	1.328746
			(0.70862)	(0.54435)

Adjustment coefficients (standard error in parentheses)

D(CEXPN)	0.556611	0.244402	-0.077494
	(0.14324)	(0.18075)	(0.04624)
D(DEFN)	-0.499008	-0.801167	0.180456
	(0.25388)	(0.32037)	(0.08196)
D(OREVN)	2.261110	-1.388054	-0.704392
	(0.56391)	(0.71159)	(0.18204)
D(TAXREVN)	0.289651	0.465132	0.117408
	(0.20849)	(0.26309)	(0.06730)
D(REXPN)	0.840882	0.369702	-0.167774
	(0.27615)	(0.34847)	(0.08915)

4 Cointegrating Equation(s): Log likelihood -790.6724

Normalized cointegrating coefficients (standard error in parentheses)

CEXPN	DEFN	OREVN	TAXREVN	REXPN
1.000000	0.000000	0.000000	0.000000	0.090188
				(0.07877)
0.000000	1.000000	0.000000	0.000000	0.604909
				(0.02810)
0.000000	0.000000	1.000000	0.000000	-0.608609
				(0.14102)
0.000000	0.000000	0.000000	1.000000	-0.569779
				(0.03702)

Adjustment coefficients (standard error in parentheses)

D(CEXPN)	0.168448	0.482011	-0.046882	-0.981673
	(0.20377)	(0.18621)	(0.04238)	(0.18701)
D(DEFN)	0.138389	-1.191341	0.130187	0.260033
	(0.36893)	(0.33714)	(0.07674)	(0.33860)
D(OREVN)	3.500233	-2.146566	-0.802116	-4.029845
	(0.84332)	(0.77064)	(0.17541)	(0.77398)
D(TAXREVN)	0.804550	0.149944	0.076800	-1.109022
	(0.30420)	(0.27798)	(0.06328)	(0.27919)
D(REXPN)	0.397427	0.641157	-0.132801	-1.343242
	(0.43020)	(0.39312)	(0.08948)	(0.39482)

APPENDIX II (a)iv: JOHANSON COINTEGRATION RESULTS (NIGERIA) GDP

Date: 10/11/19 Time: 07:46
Sample (adjusted): 1988 2017
Included observations: 27 after adjustments
Trend assumption: Linear deterministic trend
Series: CEXPN DEFN OREVN REXPN TAXREVN
Exogenous series: GDPN
Warning: Critical values assume no exogenous series
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.886173	126.7681	69.81889	0.0000
At most 1 *	0.748855	68.09520	47.85613	0.0002
At most 2 *	0.380587	30.78863	29.79707	0.0383
At most 3 *	0.287666	17.85611	15.49471	0.0216
At most 4 *	0.275395	8.697464	3.841466	0.0032

Trace test indicates 5 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.886173	58.67293	33.87687	0.0000
At most 1 *	0.748855	37.30657	27.58434	0.0021
At most 2	0.380587	12.93253	21.13162	0.4584
At most 3	0.287666	9.158641	14.26460	0.2732

At most 4 *	0.275395	8.697464	3.841466	0.0032

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

CEXPN	DEFN	OREVN	REXPN	TAXREVN
-0.005034	-0.006246	0.000380	-0.013155	0.010491
0.006898	0.015034	-0.003078	0.021981	-0.005547
-0.002856	0.002839	0.000722	-0.012086	0.003277
0.005193	-0.018457	0.000397	-0.023174	-0.004819
-0.009230	-0.005908	0.000614	-0.005584	-0.002712

Unrestricted Adjustment Coefficients (alpha):

D(CEXPN)	-83.69307	14.43087	19.69120	-13.63307	26.19238
D(DEFN)	-0.163724	-60.53167	-56.29794	-13.54397	-46.71642
D(OREVN)	-191.5973	107.5143	5.531662	-171.1614	-185.1311
D(REXPN)	-105.7818	-5.105622	103.7491	-15.14575	0.473342
D(TAXREVN)	-124.4937	-20.15201	-51.09155	34.74302	-18.48626

1 Cointegrating Equation(s): Log likelihood -844.4373

Normalized cointegrating coefficients (standard error in parentheses)

CEXPN	DEFN	OREVN	REXPN	TAXREVN
1.000000	1.240648	-0.075505	2.613133	-2.083850
	(0.40359)	(0.04125)	(0.56487)	(0.18618)

Adjustment coefficients (standard error in parentheses)

D(CEXPN)	0.421328
	(0.08435)
D(DEFN)	0.000824
	(0.17046)
D(OREVN)	0.964539
	(0.57343)
D(REXPN)	0.532527
	(0.20187)
D(TAXREVN)	0.626726
	(0.14064)

2 Cointegrating Equation(s): Log likelihood -825.7840

Normalized cointegrating coefficients (standard error in parentheses)

CEXPN	DEFN	OREVN	REXPN	TAXREVN
1.000000	0.000000	0.414443	1.855307	-3.775032
		(0.08035)	(0.73100)	(0.52027)
0.000000	1.000000	-0.394913	0.610831	1.363144
		(0.04733)	(0.43058)	(0.30645)

Adjustment coefficients (standard error in parentheses)

D(CEXPN)	0.520872	0.739666
	(0.14026)	(0.26738)
D(DEFN)	-0.416723	-0.908982
	(0.26371)	(0.50272)
D(OREVN)	1.706173	2.812973
	(0.94965)	(1.81034)

D(REXPN)	0.497308	0.583923
	(0.34230)	(0.65253)
D(TAXREVN)	0.487718	0.474591
	(0.23528)	(0.44852)

3 Cointegrating Equation(s): Log likelihood -819.3177

Normalized cointegrating coefficients (standard error in parentheses)

CEXPN	DEFN	OREVN	REXPN	TAXREVN
1.000000	0.000000	0.000000	3.022065	-2.217316
			(0.64622)	(0.48043)
0.000000	1.000000	0.000000	-0.500945	-0.121167
			(0.56605)	(0.42083)
0.000000	0.000000	1.000000	-2.815242	-3.758573
			(1.73697)	(1.29134)

Adjustment coefficients (standard error in parentheses)

D(CEXPN)	0.464627	0.795571	-0.062022
	(0.14219)	(0.26095)	(0.05028)
D(DEFN)	-0.255917	-1.068816	0.145632
	(0.25258)	(0.46353)	(0.08932)
D(OREVN)	1.690373	2.828678	-0.399777
	(1.00130)	(1.83755)	(0.35409)
D(REXPN)	0.200965	0.878474	0.050380
	(0.29041)	(0.53295)	(0.10270)
D(TAXREVN)	0.633653	0.329539	-0.022162
	(0.22452)	(0.41203)	(0.07940)

4 Cointegrating Equation(s): Log likelihood -814.7384

Normalized cointegrating coefficients (standard error in parentheses)

CEXPN	DEFN	OREVN	REXPN	TAXREVN
1.000000	0.000000	0.000000	0.000000	-1.834535
				(0.30839)
0.000000	1.000000	0.000000	0.000000	-0.184618
				(0.29032)
0.000000	0.000000	1.000000	0.000000	-4.115158
				(0.88167)
0.000000	0.000000	0.000000	1.000000	-0.126662
				(0.20041)

Adjustment coefficients (standard error in parentheses)

D(CEXPN)	0.393826	1.047193	-0.067435	1.496132
	(0.16090)	(0.38345)	(0.04967)	(0.56645)
D(DEFN)	-0.326255	-0.818838	0.140254	-0.334103
	(0.28979)	(0.69063)	(0.08946)	(1.02023)
D(OREVN)	0.801477	5.987758	-0.467741	8.783345
	(1.08143)	(2.57729)	(0.33385)	(3.80730)
D(REXPN)	0.122308	1.158015	0.044366	0.376415
	(0.33330)	(0.79433)	(0.10289)	(1.17342)
D(TAXREVN)	0.814085	-0.311704	-0.008367	1.007121
	(0.24559)	(0.58529)	(0.07582)	(0.86462)

APPENDIX II (b)i: JOHANSON COINTEGRATION TEST (GHANA) UNPg

Date: 10/11/19 Time: 01:52
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments
Trend assumption: Linear deterministic trend
Series: TAXREVG OREVG CEXPG REXPG DEFG
Exogenous series: UNPG
Warning: Critical values assume no exogenous series
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.800375	100.7677	69.81889	0.0000
At most 1 *	0.650640	52.42830	47.85613	0.0175
At most 2	0.429366	20.87873	29.79707	0.3652
At most 3	0.105206	4.048484	15.49471	0.8996
At most 4	0.023507	0.713625	3.841466	0.3982

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.800375	48.33943	33.87687	0.0005
At most 1 *	0.650640	31.54957	27.58434	0.0146
At most 2	0.429366	16.83024	21.13162	0.1802
At most 3	0.105206	3.334859	14.26460	0.9220
At most 4	0.023507	0.713625	3.841466	0.3982

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

TAXREVG	OREVG	CEXPG	REXPG	DEFG
0.704918	0.000339	-0.294337	0.065792	0.001732
0.674717	0.000164	-0.210119	0.109698	-0.000190
0.173715	-0.002090	0.006370	0.028232	-0.001738
-0.538056	0.000867	-0.174501	-0.048436	0.000580
-0.563789	0.001111	-0.205925	0.013220	0.000620

Unrestricted Adjustment Coefficients (alpha):

D(TAXREVG)	-0.481784	-0.015492	-0.423549	0.296341	-0.053392
D(OREVG)	12.71054	-58.16284	271.8689	81.66760	-8.442792
D(CEXPG)	-0.221778	3.018113	0.137359	0.486869	0.022429
D(REXPG)	-2.815483	-0.051762	0.380547	0.034934	0.298361
D(DEFG)	-199.6133	327.2955	67.33043	-27.51240	-70.41624

1 Cointegrating Equation(s):		Log likelihood	-652.4715	

Normalized cointegrating coefficients (standard error in parentheses)

TAXREVG	OREVG	CEXPG	REXPG	DEFG
1.000000	0.000481	-0.417547	0.093333	0.002457
	(0.00036)	(0.06613)	(0.01232)	(0.00039)

Adjustment coefficients (standard error in parentheses)

D(TAXREVG)	-0.339618
	(0.17985)
D(OREVG)	8.959891
	(74.2086)
D(CEXPG)	-0.156336
	(0.60734)
D(REXPG)	-1.984686
	(0.37171)
D(DEFG)	-140.7110
	(95.4388)

2 Cointegrating Equation(s):		Log likelihood	-636.6967	

Normalized cointegrating coefficients (standard error in parentheses)

TAXREVG	OREVG	CEXPG	REXPG	DEFG
1.000000	0.000000	-0.202870	0.233411	-0.003083
		(0.17349)	(0.03865)	(0.00061)
0.000000	1.000000	-446.6134	-291.4188	11.52665
		(409.255)	(91.1729)	(1.44476)

Adjustment coefficients (standard error in parentheses)

D(TAXREVG)	-0.350071	-0.000166
	(0.24894)	(9.6E-05)
D(OREVG)	-30.28359	-0.005231
	(102.008)	(0.03935)
D(CEXPG)	1.880038	0.000420
	(0.55907)	(0.00022)
D(REXPG)	-2.019610	-0.000962
	(0.51442)	(0.00020)
D(DEFG)	80.12093	-0.013964
	(113.213)	(0.04367)

3 Cointegrating Equation(s):		Log likelihood	-628.2816	

Normalized cointegrating coefficients (standard error in parentheses)

TAXREVG	OREVG	CEXPG	REXPG	DEFG
1.000000	0.000000	0.000000	0.374764	-0.008290
			(0.06255)	(0.00128)
0.000000	1.000000	0.000000	19.76531	0.064480
			(9.23994)	(0.18869)
0.000000	0.000000	1.000000	0.696764	-0.025665
			(0.16743)	(0.00342)

Adjustment coefficients (standard error in parentheses)

D(TAXREVG)	-0.423647	0.000719	0.142364
	(0.23648)	(0.00051)	(0.08630)
D(OREVG)	16.94412	-0.573417	10.21163
	(86.2273)	(0.18475)	(31.4674)
D(CEXPG)	1.903899	0.000133	-0.568011

	(0.56712)	(0.00122)	(0.20696)
D(REXPG)	-1.953504	-0.001758	0.842000
	(0.51628)	(0.00111)	(0.18841)
D(DEFG)	91.81724	-0.154680	-9.588700
	(114.109)	(0.24449)	(41.6425)

4 Cointegrating Equation(s): Log likelihood -626.6142

Normalized cointegrating coefficients (standard error in parentheses)

TAXREVG	OREVG	CEXPG	REXPG	DEFG
1.000000	0.000000	0.000000	0.000000	0.003949
				(0.00077)
0.000000	1.000000	0.000000	0.000000	0.709985
				(0.10636)
0.000000	0.000000	1.000000	0.000000	-0.002909
				(0.00136)
0.000000	0.000000	0.000000	1.000000	-0.032658
				(0.00352)

Adjustment coefficients (standard error in parentheses)

D(TAXREVG)	-0.583096	0.000976	0.090652	-0.059708
	(0.25947)	(0.00053)	(0.09240)	(0.03213)
D(OREVG)	-26.99765	-0.502644	-4.039478	-1.824251
	(96.1291)	(0.19550)	(34.2313)	(11.9046)
D(CEXPG)	1.641936	0.000555	-0.652970	0.296785
	(0.63459)	(0.00129)	(0.22598)	(0.07859)
D(REXPG)	-1.972300	-0.001728	0.835904	-0.181864
	(0.58740)	(0.00119)	(0.20917)	(0.07274)
D(DEFG)	106.6205	-0.178522	-4.787748	26.00404
	(129.671)	(0.26372)	(46.1755)	(16.0585)

APPENDIX II (b)ii: JOHANSON COINTEGRATION TEST (GHANA) GDP

Date: 10/11/19 Time: 01:59
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments
Trend assumption: Linear deterministic trend
Series: OREVG TAXREVG CEXPG DEFG REXPG
Exogenous series: GDPG
Warning: Critical values assume no exogenous series
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.820025	119.5203	69.81889	0.0000
At most 1 *	0.699954	68.07215	47.85613	0.0002
At most 2 *	0.438375	31.95758	29.79707	0.0278
At most 3	0.385445	14.64995	15.49471	0.0668
At most 4	0.001473	0.044223	3.841466	0.8334

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.820025	51.44817	33.87687	0.0002
At most 1 *	0.699954	36.11456	27.58434	0.0032
At most 2	0.438375	17.30764	21.13162	0.1580
At most 3 *	0.385445	14.60572	14.26460	0.0442
At most 4	0.001473	0.044223	3.841466	0.8334

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

OREVG	TAXREVG	CEXPG	DEFG	REXPG
0.001622	0.283673	0.070055	-0.000789	-0.065014
-0.000111	0.994711	-0.345063	0.000969	0.133274
0.000580	-0.157082	-0.081895	1.51E-06	0.062084
-0.001798	0.000646	-0.003081	-0.001867	0.024502
0.002068	-0.693502	-0.206669	0.000516	-0.068805

Unrestricted Adjustment Coefficients (alpha):

D(OREVG)	-159.4758	12.49097	-112.6306	247.6839	-6.009067
D(TAXREVG)	-0.183201	-0.430347	0.318635	-0.169264	-0.035037
D(CEXPG)	-0.270650	1.943379	1.692612	0.724039	-0.022799
D(DEFG)	447.7272	10.98619	199.4642	196.8350	-6.343760
D(REXPG)	-1.860516	-1.590833	1.055648	0.641486	0.080127

1 Cointegrating Equation(s): Log likelihood -650.2897

Normalized cointegrating coefficients (standard error in parentheses)

OREVG	TAXREVG	CEXPG	DEFG	REXPG
1.000000	174.9352	43.20136	-0.486808	-40.09296
	(73.9984)	(24.9285)	(0.12970)	(9.58098)

Adjustment coefficients (standard error in parentheses)

D(OREVG)	-0.258604
	(0.16157)
D(TAXREVG)	-0.000297
	(0.00041)
D(CEXPG)	-0.000439
	(0.00128)
D(DEFG)	0.726030
	(0.17722)
D(REXPG)	-0.003017
	(0.00121)

2 Cointegrating Equation(s): Log likelihood -632.2324

Normalized cointegrating coefficients (standard error in parentheses)

OREVG	TAXREVG	CEXPG	DEFG	REXPG
1.000000	0.000000	101.8888	-0.644516	-62.30991
		(23.9207)	(0.13125)	(7.67539)

0.000000	1.000000	-0.335481	0.000902	0.127001
		(0.05069)	(0.00028)	(0.01626)

Adjustment coefficients (standard error in parentheses)

D(OREVG)	-0.259997	-32.81413
	(0.16190)	(103.027)
D(TAXREVG)	-0.000249	-0.480040
	(0.00038)	(0.24419)
D(CEXPG)	-0.000655	1.856323
	(0.00109)	(0.69329)
D(DEFG)	0.724806	137.9363
	(0.17760)	(113.018)
D(REXPG)	-0.002840	-2.110197
	(0.00109)	(0.69082)

3 Cointegrating Equation(s): Log likelihood -623.5786

Normalized cointegrating coefficients (standard error in parentheses)

OREVG	TAXREVG	CEXPG	DEFG	REXPG
1.000000	0.000000	0.000000	-0.372524	-0.145581
			(0.24777)	(10.4557)
0.000000	1.000000	0.000000	5.96E-06	-0.077682
			(0.00079)	(0.03354)
0.000000	0.000000	1.000000	-0.002669	-0.610120
			(0.00235)	(0.09922)

Adjustment coefficients (standard error in parentheses)

D(OREVG)	-0.325355	-15.12184	-6.258332
	(0.16684)	(101.135)	(34.9448)
D(TAXREVG)	-6.42E-05	-0.530092	0.109568
	(0.00039)	(0.23654)	(0.08173)
D(CEXPG)	0.000327	1.590444	-0.828164
	(0.00097)	(0.59093)	(0.20418)
D(DEFG)	0.840553	106.6040	11.23942
	(0.17371)	(105.300)	(36.3841)
D(REXPG)	-0.002227	-2.276020	0.332146
	(0.00109)	(0.65787)	(0.22731)

4 Cointegrating Equation(s): Log likelihood -616.2757

Normalized cointegrating coefficients (standard error in parentheses)

OREVG	TAXREVG	CEXPG	DEFG	REXPG
1.000000	0.000000	0.000000	0.000000	-3.426060
				(7.90961)
0.000000	1.000000	0.000000	0.000000	-0.077630
				(0.03182)
0.000000	0.000000	1.000000	0.000000	-0.633627
				(0.11272)
0.000000	0.000000	0.000000	1.000000	-8.806083
				(10.4583)

Adjustment coefficients (standard error in parentheses)

D(OREVG)	-0.770681	-14.96183	-7.021446	-0.324592
	(0.20179)	(84.7107)	(29.2709)	(0.18189)
D(TAXREVG)	0.000240	-0.530201	0.110089	4.43E-05
	(0.00056)	(0.23351)	(0.08069)	(0.00050)
D(CEXPG)	-0.000975	1.590912	-0.830395	0.000747
	(0.00135)	(0.56843)	(0.19641)	(0.00122)
D(DEFG)	0.486652	106.7312	10.63297	-0.709974

	(0.22800)	(95.7102)	(33.0717)	(0.20551)
D(REXPG)	-0.003380	-2.275606	0.330170	-0.001268
	(0.00153)	(0.64212)	(0.22188)	(0.00138)

APPENDIX II(b)iii: JOHANSON COINTEGRATION TEST (GHANA) POVg

Date: 10/11/19 Time: 02:04
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments
Trend assumption: Linear deterministic trend
Series: OREVG DEFG CEXPG TAXREVG REXPG
Exogenous series: POVG
Warning: Critical values assume no exogenous series
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.739741	102.9384	69.81889	0.0000
At most 1 *	0.699590	62.55612	47.85613	0.0012
At most 2	0.396074	26.47787	29.79707	0.1151
At most 3	0.267935	11.34874	15.49471	0.1909
At most 4	0.064249	1.992172	3.841466	0.1581

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.739741	40.38229	33.87687	0.0073
At most 1 *	0.699590	36.07825	27.58434	0.0032
At most 2	0.396074	15.12913	21.13162	0.2800
At most 3	0.267935	9.356572	14.26460	0.2577
At most 4	0.064249	1.992172	3.841466	0.1581

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

OREVG	DEFG	CEXPG	TAXREVG	REXPG
0.000446	-0.000493	0.103716	-0.120062	-0.051289
-0.000152	-0.000782	0.322421	-1.014933	-0.120619
0.001876	0.001600	-0.019870	-0.056208	0.006865
-0.000705	-0.001258	0.040872	0.131284	0.083265
0.001199	0.000276	-0.272384	-0.792155	0.030768

Unrestricted Adjustment Coefficients (alpha):

D(OREVG)	-97.73375	27.02463	-270.2003	5.964275	53.57465
D(DEFG)	280.9903	-123.8623	-83.36460	296.2412	-11.02708
D(CEXPG)	2.043705	-2.386813	-0.313782	0.105586	0.403484
D(TAXREVG)	0.406199	0.366982	0.290992	0.151683	0.238371
D(REXPG)	2.329243	1.338820	-0.678628	-1.130430	-0.021310

1 Cointegrating Equation(s): Log likelihood -658.9021

Normalized cointegrating coefficients (standard error in parentheses)

OREVG	DEFG	CEXPG	TAXREVG	REXPG
1.000000	-1.103985	232.4667	-269.1050	-114.9580
	(0.40928)	(114.576)	(347.057)	(44.8832)

Adjustment coefficients (standard error in parentheses)

D(OREVG)	-0.043604
	(0.04597)
D(DEFG)	0.125365
	(0.05991)
D(CEXPG)	0.000912
	(0.00034)
D(TAXREVG)	0.000181
	(0.00011)
D(REXPG)	0.001039
	(0.00031)

2 Cointegrating Equation(s): Log likelihood -640.8629

Normalized cointegrating coefficients (standard error in parentheses)

OREVG	DEFG	CEXPG	TAXREVG	REXPG
1.000000	0.000000	-183.1809	957.4778	45.48775
		(109.622)	(266.140)	(44.1594)
0.000000	1.000000	-376.4976	1111.051	145.3334
		(59.3430)	(144.073)	(23.9054)

Adjustment coefficients (standard error in parentheses)

D(OREVG)	-0.047718	0.026997
	(0.04849)	(0.09510)
D(DEFG)	0.144220	-0.041503
	(0.06206)	(0.12171)
D(CEXPG)	0.001275	0.000861
	(0.00026)	(0.00051)
D(TAXREVG)	0.000125	-0.000487
	(0.00011)	(0.00022)
D(REXPG)	0.000835	-0.002195
	(0.00030)	(0.00058)

3 Cointegrating Equation(s): Log likelihood -633.2984

Normalized cointegrating coefficients (standard error in parentheses)

OREVG	DEFG	CEXPG	TAXREVG	REXPG
1.000000	0.000000	0.000000	239.5529	-16.02601
			(161.022)	(17.4316)
0.000000	1.000000	0.000000	-364.5238	18.90212
			(210.377)	(22.7745)

0.000000	0.000000	1.000000	-3.919213	-0.335809
			(0.68537)	(0.07419)

Adjustment coefficients (standard error in parentheses)

D(OREVG)	-0.554496	-0.405428	3.945544
	(0.16482)	(0.15752)	(28.9155)
D(DEFG)	-0.012136	-0.174919	-9.136144
	(0.25228)	(0.24110)	(44.2592)
D(CEXPG)	0.000687	0.000358	-0.551358
	(0.00106)	(0.00102)	(0.18641)
D(TAXREVG)	0.000671	-2.15E-05	0.154670
	(0.00045)	(0.00043)	(0.07974)
D(REXPG)	-0.000437	-0.003281	0.686727
	(0.00118)	(0.00113)	(0.20659)

4 Cointegrating Equation(s): Log likelihood -628.6201

Normalized cointegrating coefficients (standard error in parentheses)

OREVG	DEFG	CEXPG	TAXREVG	REXPG
1.000000	0.000000	0.000000	0.000000	-14840.88
				(4019.37)
0.000000	1.000000	0.000000	0.000000	22577.64
				(6120.47)
0.000000	0.000000	1.000000	0.000000	242.2067
				(65.7436)
0.000000	0.000000	0.000000	1.000000	61.88550
				(16.7698)

Adjustment coefficients (standard error in parentheses)

D(OREVG)	-0.558702	-0.412932	4.189318	0.276381
	(0.17542)	(0.19053)	(29.1213)	(87.9399)
D(DEFG)	-0.221039	-0.547639	2.971964	135.5532
	(0.23496)	(0.25520)	(39.0061)	(117.790)
D(CEXPG)	0.000612	0.000226	-0.547043	2.208583
	(0.00113)	(0.00123)	(0.18760)	(0.56651)
D(TAXREVG)	0.000564	-0.000212	0.160870	-0.417674
	(0.00048)	(0.00052)	(0.07955)	(0.24023)
D(REXPG)	0.000360	-0.001858	0.640524	-1.748731
	(0.00115)	(0.00125)	(0.19109)	(0.57705)

APPENDIX II(b)iv: JOHANSON COINTEGRATION TEST (GHANA) HDIg

Date: 10/11/19 Time: 02:07
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments
Trend assumption: Linear deterministic trend
Series: DEFG CEXPG OREVG REXPG TAXREVG
Exogenous series: HDIG
Warning: Critical values assume no exogenous series
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**

None *	0.701966	84.67128	69.81889	0.0021
At most 1 *	0.617972	48.35486	47.85613	0.0448
At most 2	0.397084	19.48701	29.79707	0.4583
At most 3	0.121166	4.307669	15.49471	0.8772
At most 4	0.014327	0.432904	3.841466	0.5106

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.701966	36.31641	33.87687	0.0251
At most 1 *	0.617972	28.86785	27.58434	0.0341
At most 2	0.397084	15.17935	21.13162	0.2765
At most 3	0.121166	3.874765	14.26460	0.8723
At most 4	0.014327	0.432904	3.841466	0.5106

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

DEFG	CEXPG	OREVG	REXPG	TAXREVG
0.000808	-0.328416	1.06E-05	0.135959	1.024410
-0.000734	0.032885	0.000383	0.066091	-0.061288
0.001911	-0.033866	0.001996	-0.036844	-0.019544
0.000692	-0.202095	0.001119	0.014164	-0.684913
0.000378	-0.207577	0.000955	-0.121841	-0.225470

Unrestricted Adjustment Coefficients (alpha):

D(DEFG)	76.59361	388.8153	-159.7275	-135.5948	-8.429974
D(CEXPG)	1.972079	2.155593	-0.427295	0.453845	-0.047903
D(OREVG)	-7.170292	-101.9023	-268.3515	39.93405	-20.80089
D(REXPG)	-1.744990	0.989417	-0.477635	0.863762	0.239115
D(TAXREVG)	-0.441188	0.476818	0.216395	0.073482	-0.106340

1 Cointegrating Equation(s): Log likelihood -661.1710

Normalized cointegrating coefficients (standard error in parentheses)

DEFG	CEXPG	OREVG	REXPG	TAXREVG
1.000000	-406.5571	0.013072	168.3075	1268.151
	(62.9610)	(0.26035)	(33.9097)	(214.765)

Adjustment coefficients (standard error in parentheses)

D(DEFG)	0.061872
	(0.11783)
D(CEXPG)	0.001593
	(0.00058)
D(OREVG)	-0.005792
	(0.08464)
D(REXPG)	-0.001410
	(0.00064)

D(TAXREVG)	-0.000356
	(0.00020)

2 Cointegrating Equation(s): Log likelihood -646.7371

Normalized cointegrating coefficients (standard error in parentheses)

DEFG	CEXPG	OREVG	REXPG	TAXREVG
1.000000	0.000000	-0.587595	-121.9941	-63.19381
		(0.38972)	(47.9870)	(309.528)
0.000000	1.000000	-0.001477	-0.714049	-3.274681
		(0.00120)	(0.14727)	(0.94990)

Adjustment coefficients (standard error in parentheses)

D(DEFG)	-0.223610	-12.36847
	(0.13102)	(39.6133)
D(CEXPG)	1.03E-05	-0.576777
	(0.00061)	(0.18409)
D(OREVG)	0.069028	-0.996198
	(0.11190)	(33.8324)
D(REXPG)	-0.002136	0.605620
	(0.00083)	(0.24999)
D(TAXREVG)	-0.000706	0.160573
	(0.00025)	(0.07628)

3 Cointegrating Equation(s): Log likelihood -639.1474

Normalized cointegrating coefficients (standard error in parentheses)

DEFG	CEXPG	OREVG	REXPG	TAXREVG
1.000000	0.000000	0.000000	-89.04956	-65.05175
			(30.1743)	(151.537)
0.000000	1.000000	0.000000	-0.631213	-3.279353
			(0.10839)	(0.54433)
0.000000	0.000000	1.000000	56.06672	-3.161944
			(30.2257)	(151.795)

Adjustment coefficients (standard error in parentheses)

D(DEFG)	-0.528793	-6.959104	-0.169184
	(0.25325)	(38.1847)	(0.23393)
D(CEXPG)	-0.000806	-0.562306	-6.88E-06
	(0.00121)	(0.18257)	(0.00112)
D(OREVG)	-0.443696	8.091845	-0.574775
	(0.18716)	(28.2195)	(0.17288)
D(REXPG)	-0.003049	0.621795	-0.000593
	(0.00165)	(0.24902)	(0.00153)
D(TAXREVG)	-0.000293	0.153245	0.000610
	(0.00050)	(0.07513)	(0.00046)

4 Cointegrating Equation(s): Log likelihood -637.2100

Normalized cointegrating coefficients (standard error in parentheses)

DEFG	CEXPG	OREVG	REXPG	TAXREVG
1.000000	0.000000	0.000000	0.000000	945.4098
				(353.564)
0.000000	1.000000	0.000000	0.000000	3.883138
				(2.44048)
0.000000	0.000000	1.000000	0.000000	-639.3612
				(223.005)
0.000000	0.000000	0.000000	1.000000	11.34718

				(3.96289)

Adjustment coefficients (standard error in parentheses)

D(DEFG)	-0.622662	20.44389	-0.320897	40.07527
	(0.25697)	(43.2769)	(0.25846)	(17.4046)
D(CEXPG)	-0.000492	-0.654025	0.000501	0.432759
	(0.00125)	(0.21044)	(0.00126)	(0.08463)
D(OREVG)	-0.416051	0.021385	-0.530094	2.743163
	(0.19521)	(32.8762)	(0.19635)	(13.2218)
D(REXPG)	-0.002451	0.447234	0.000373	-0.142022
	(0.00168)	(0.28267)	(0.00169)	(0.11368)
D(TAXREVG)	-0.000242	0.138395	0.000692	-0.035402
	(0.00052)	(0.08776)	(0.00052)	(0.03530)

APPENDIX II(C)i: JOHANSON COINTEGRATION TEST (SUB SAHARAN AFRICA) GDPS

Date: 02/06/20 Time: 17:18
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments
Trend assumption: Linear deterministic trend
Series: TAXREVS OREVS CEXPS REXPS DEFS
Exogenous series: GDPS_$
Warning: Critical values assume no exogenous series
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.770675	122.4289	69.81889	0.0000
At most 1 *	0.663701	78.25052	47.85613	0.0000
At most 2 *	0.595218	45.55790	29.79707	0.0004
At most 3 *	0.437183	18.42573	15.49471	0.0176
At most 4	0.038625	1.181716	3.841466	0.2770

Trace test indicates 4 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.770675	44.17842	33.87687	0.0021
At most 1 *	0.663701	32.69261	27.58434	0.0101
At most 2 *	0.595218	27.13218	21.13162	0.0063
At most 3 *	0.437183	17.24401	14.26460	0.0164
At most 4	0.038625	1.181716	3.841466	0.2770

Max-eigenvalue test indicates 4 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

TAXREVS	OREVS	CEXPS	REXPS	DEFS
0.006002	-0.000916	0.002243	0.006465	0.001372
-0.021412	0.001333	0.010838	0.015673	-5.40E-05
-0.006403	0.003098	0.000519	-0.001546	-0.002032
0.003894	0.000957	-0.006646	-0.001707	0.002927
0.011284	0.000577	0.012457	-0.007345	0.002098

Unrestricted Adjustment Coefficients (alpha):

D(TAXREVS)	-29.94884	50.20658	10.95002	-15.61215	2.788781
D(OREVS)	-349.7881	-55.62333	-393.7542	-156.8428	-3.085029
D(CEXPS)	-8.851155	22.08172	9.623517	35.51080	-2.931299
D(REXPS)	41.39766	47.03722	-58.69457	30.76740	5.800693
D(DEFS)	-39.09492	-102.6957	83.38819	-135.8131	-46.56799

1 Cointegrating Equation(s): Log likelihood -939.7939

Normalized cointegrating coefficients (standard error in parentheses)

TAXREVS	OREVS	CEXPS	REXPS	DEFS
1.000000	-0.152602	0.373683	1.077173	0.228648
	(0.06325)	(0.33850)	(0.22740)	(0.07279)

Adjustment coefficients (standard error in parentheses)

D(TAXREVS)	-0.179741
	(0.09071)
D(OREVS)	-2.099291
	(0.76566)
D(CEXPS)	-0.053121
	(0.08113)
D(REXPS)	0.248453
	(0.14402)
D(DEFS)	-0.234632
	(0.45485)

2 Cointegrating Equation(s): Log likelihood -923.4475

Normalized cointegrating coefficients (standard error in parentheses)

TAXREVS	OREVS	CEXPS	REXPS	DEFS
1.000000	0.000000	-1.112192	-1.978120	-0.153242
		(0.31014)	(0.17970)	(0.06735)
0.000000	1.000000	-9.736900	-20.02126	-2.502516
		(3.95004)	(2.28868)	(0.85778)

Adjustment coefficients (standard error in parentheses)

D(TAXREVS)	-1.254769	0.094341
	(0.23726)	(0.01725)
D(OREVS)	-0.908279	0.246226
	(2.82466)	(0.20541)
D(CEXPS)	-0.525937	0.037536
	(0.28179)	(0.02049)
D(REXPS)	-0.758713	0.024774
	(0.48478)	(0.03525)
D(DEFS)	1.964297	-0.101061
	(1.61345)	(0.11733)

3 Cointegrating Equation(s): Log likelihood -909.8815

Normalized cointegrating coefficients (standard error in parentheses)

TAXREVS	OREVS	CEXPS	REXPS	DEFS
1.000000	0.000000	0.000000	0.278754	0.070498
			(0.15815)	(0.06076)
0.000000	1.000000	0.000000	-0.263023	-0.543744
			(0.72971)	(0.28036)
0.000000	0.000000	1.000000	2.029212	0.201170
			(0.25115)	(0.09649)

Adjustment coefficients (standard error in parentheses)

D(TAXREVS)	-1.324887	0.128264	0.482639
	(0.24092)	(0.03638)	(0.11535)
D(OREVS)	1.613106	-0.973624	-1.591687
	(2.20600)	(0.33314)	(1.05619)
D(CEXPS)	-0.587561	0.067349	0.224459
	(0.28938)	(0.04370)	(0.13855)
D(REXPS)	-0.382865	-0.157062	0.572148
	(0.41308)	(0.06238)	(0.19778)
D(DEFS)	1.430325	0.157276	-1.157373
	(1.62783)	(0.24583)	(0.77938)

4 Cointegrating Equation(s): Log likelihood -901.2594

Normalized cointegrating coefficients (standard error in parentheses)

TAXREVS	OREVS	CEXPS	REXPS	DEFS
1.000000	0.000000	0.000000	0.000000	-0.044369
				(0.05206)
0.000000	1.000000	0.000000	0.000000	-0.435360
				(0.22899)
0.000000	0.000000	1.000000	0.000000	-0.635009
				(0.14656)
0.000000	0.000000	0.000000	1.000000	0.412071
				(0.07386)

Adjustment coefficients (standard error in parentheses)

D(TAXREVS)	-1.385685	0.113322	0.586398	0.602975
	(0.23149)	(0.03574)	(0.12745)	(0.16878)
D(OREVS)	1.002323	-1.123732	-0.549303	-2.256382
	(2.09488)	(0.32346)	(1.15338)	(1.52739)
D(CEXPS)	-0.449273	0.101335	-0.011547	0.213356
	(0.23355)	(0.03606)	(0.12859)	(0.17028)
D(REXPS)	-0.263050	-0.127616	0.367667	1.043073
	(0.38958)	(0.06015)	(0.21449)	(0.28405)
D(DEFS)	0.901437	0.027294	-0.254754	-1.759369
	(1.50439)	(0.23229)	(0.82828)	(1.09686)

APPENDIX II(C)ii: JOHANSON COINTEGRATION TEST (SUB SAHARAN AFRICA) HDI

Date: 02/06/20 Time: 17:50
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments
Trend assumption: Linear deterministic trend
Series: TAXREVS OREVS CEXPS REXPS DEFS
Exogenous series: HDI
Warning: Critical values assume no exogenous series
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.810223	123.0403	69.81889	0.0000
At most 1 *	0.710063	73.18318	47.85613	0.0000
At most 2 *	0.505626	36.04044	29.79707	0.0084
At most 3	0.352836	14.90656	15.49471	0.0612
At most 4	0.059863	1.851890	3.841466	0.1736

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.810223	49.85713	33.87687	0.0003
At most 1 *	0.710063	37.14274	27.58434	0.0022
At most 2 *	0.505626	21.13388	21.13162	0.0500
At most 3	0.352836	13.05467	14.26460	0.0770
At most 4	0.059863	1.851890	3.841466	0.1736

Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

TAXREVS	OREVS	CEXPS	REXPS	DEFS
0.002025	0.001230	-0.003420	-0.007676	-0.000866
0.020441	-0.002008	-0.007018	-0.006741	0.001378
0.000246	0.000293	0.001759	-0.005263	-0.003341
-0.000842	0.002135	-0.009037	-0.003054	-0.000165
0.014493	0.000566	0.007627	-0.011480	0.002264

Unrestricted Adjustment Coefficients (alpha):

D(TAXREVS)	-27.96388	-63.37197	14.81078	2.598982	2.599223
D(OREVS)	157.6084	-108.8312	-41.22236	-408.3173	-1.768266
D(CEXPS)	13.83637	-18.90252	-33.52655	19.64519	-2.885322
D(REXPS)	-95.83627	-3.680734	-53.67455	-4.723160	7.769139
D(DEFS)	129.2921	40.92776	156.4093	-29.78630	-60.89118

1 Cointegrating Equation(s):	Log likelihood	-948.2949

Normalized cointegrating coefficients (standard error in parentheses)

TAXREVS	OREVS	CEXPS	REXPS	DEFS
1.000000	0.607698	-1.689121	-3.791174	-0.427547
	(0.15189)	(0.72477)	(0.54152)	(0.18756)

Adjustment coefficients (standard error in parentheses)

D(TAXREVS)	-0.056621
	(0.03455)
D(OREVS)	0.319124

	(0.30477)
D(CEXPS)	0.028016
	(0.02732)
D(REXPS)	-0.194048
	(0.04082)
D(DEFS)	0.261789
	(0.14898)

2 Cointegrating Equation(s): Log likelihood -929.7235

Normalized cointegrating coefficients (standard error in parentheses)

TAXREVS	OREVS	CEXPS	REXPS	DEFS
1.000000	0.000000	-0.530609	-0.811442	-0.001478
		(0.12834)	(0.05256)	(0.03346)
0.000000	1.000000	-1.906394	-4.903310	-0.701118
		(1.02437)	(0.41949)	(0.26703)

Adjustment coefficients (standard error in parentheses)

D(TAXREVS)	-1.352003	0.092836
	(0.21404)	(0.02454)
D(OREVS)	-1.905489	0.412453
	(3.05486)	(0.35023)
D(CEXPS)	-0.358370	0.054979
	(0.26446)	(0.03032)
D(REXPS)	-0.269286	-0.110532
	(0.41375)	(0.04743)
D(DEFS)	1.098391	0.076910
	(1.50075)	(0.17205)

3 Cointegrating Equation(s): Log likelihood -919.1566

Normalized cointegrating coefficients (standard error in parentheses)

TAXREVS	OREVS	CEXPS	REXPS	DEFS
1.000000	0.000000	0.000000	-1.597184	-0.680817
			(0.24668)	(0.16689)
0.000000	1.000000	0.000000	-7.726360	-3.141876
			(0.92569)	(0.62627)
0.000000	0.000000	1.000000	-1.480832	-1.280300
			(0.46312)	(0.31332)

Adjustment coefficients (standard error in parentheses)

D(TAXREVS)	-1.348354	0.097176	0.566460
	(0.20399)	(0.02357)	(0.07947)
D(OREVS)	-1.915646	0.400374	0.152246
	(3.04974)	(0.35231)	(1.18814)
D(CEXPS)	-0.366630	0.045155	0.026356
	(0.21997)	(0.02541)	(0.08570)
D(REXPS)	-0.282510	-0.126260	0.259171
	(0.34052)	(0.03934)	(0.13266)
D(DEFS)	1.136928	0.122742	-0.454257
	(1.33541)	(0.15427)	(0.52026)

4 Cointegrating Equation(s): Log likelihood -912.6293

Normalized cointegrating coefficients (standard error in parentheses)

TAXREVS	OREVS	CEXPS	REXPS	DEFS
1.000000	0.000000	0.000000	0.000000	6.263350
				(1.07065)

0.000000	1.000000	0.000000	0.000000	30.45045
				(5.27542)
0.000000	0.000000	1.000000	0.000000	5.157996
				(0.93488)
0.000000	0.000000	0.000000	1.000000	4.347756
				(0.70483)

Adjustment coefficients (standard error in parentheses)

D(TAXREVS)	-1.350543	0.102724	0.542973	0.555983
	(0.20385)	(0.03165)	(0.11968)	(0.11790)
D(OREVS)	-1.571846	-0.471210	3.842138	0.987726
	(2.47249)	(0.38385)	(1.45166)	(1.42999)
D(CEXPS)	-0.383171	0.087089	-0.151174	0.137666
	(0.20262)	(0.03146)	(0.11896)	(0.11719)
D(REXPS)	-0.278534	-0.136342	0.301853	1.057390
	(0.34018)	(0.05281)	(0.19973)	(0.19675)
D(DEFS)	1.162008	0.059161	-0.185084	-2.000590
	(1.33014)	(0.20650)	(0.78096)	(0.76930)

APPENDIX II(C)iii: JOHANSON COINTEGRATION TEST (SUB SAHARAN AFRICA) UNPs

Date: 02/06/20 Time: 17:53
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments
Trend assumption: Linear deterministic trend
Series: TAXREVS OREVS CEXPS REXPS DEFS
Exogenous series: UNPS__
Warning: Critical values assume no exogenous series
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.808175	117.3113	69.81889	0.0000
At most 1 *	0.682506	67.77618	47.85613	0.0003
At most 2 *	0.491763	33.35733	29.79707	0.0187
At most 3	0.327755	13.05309	15.49471	0.1129
At most 4	0.037258	1.139107	3.841466	0.2858

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.808175	49.53517	33.87687	0.0003
At most 1 *	0.682506	34.41885	27.58434	0.0057
At most 2	0.491763	20.30424	21.13162	0.0649
At most 3	0.327755	11.91398	14.26460	0.1139
At most 4	0.037258	1.139107	3.841466	0.2858

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

TAXREVS	OREVS	CEXPS	REXPS	DEFS
0.000394	0.001384	-0.002744	-0.007267	-0.000923
0.022181	-0.001733	-0.008479	-0.009331	0.001181
-0.003242	0.000653	0.001244	-0.003685	-0.003660
-0.007145	0.002600	-0.007786	0.000573	-0.000433
0.013153	0.000880	0.006943	-0.011502	0.001946

Unrestricted Adjustment Coefficients (alpha):

D(TAXREVS)	-10.64277	-58.77851	14.91647	2.797657	3.361158
D(OREVS)	124.2498	-160.5430	-40.96011	-371.9816	-22.87578
D(CEXPS)	17.65147	-15.63674	-30.87791	21.33856	-2.102628
D(REXPS)	-89.61722	-15.94054	-55.99247	-4.948713	5.121415
D(DEFS)	86.90776	34.35882	173.9194	-6.962276	-44.45826

1 Cointegrating Equation(s): Log likelihood -945.0771

Normalized cointegrating coefficients (standard error in parentheses)

TAXREVS	OREVS	CEXPS	REXPS	DEFS
1.000000	3.509766	-6.956035	-18.42348	-2.339774
	(0.82608)	(3.59952)	(2.81585)	(0.96942)

Adjustment coefficients (standard error in parentheses)

D(TAXREVS)	-0.004198
	(0.00644)
D(OREVS)	0.049010
	(0.05833)
D(CEXPS)	0.006963
	(0.00524)
D(REXPS)	-0.035349
	(0.00817)
D(DEFS)	0.034281
	(0.02892)

2 Cointegrating Equation(s): Log likelihood -927.8677

Normalized cointegrating coefficients (standard error in parentheses)

TAXREVS	OREVS	CEXPS	REXPS	DEFS
1.000000	0.000000	-0.525399	-0.812635	0.001130
		(0.11664)	(0.05155)	(0.03159)
0.000000	1.000000	-1.832212	-5.017671	-0.666968
		(0.99551)	(0.43997)	(0.26957)

Adjustment coefficients (standard error in parentheses)

D(TAXREVS)	-1.307979	0.087115
	(0.23237)	(0.02323)
D(OREVS)	-3.512036	0.450197
	(3.19144)	(0.31906)
D(CEXPS)	-0.339880	0.051532
	(0.28514)	(0.02851)
D(REXPS)	-0.388931	-0.096447
	(0.45314)	(0.04530)
D(DEFS)	0.796403	0.060781
	(1.61818)	(0.16178)

3 Cointegrating Equation(s):	Log likelihood	-917.7155		

Normalized cointegrating coefficients (standard error in parentheses)

TAXREVS	OREVS	CEXPS	REXPS	DEFS
1.000000	0.000000	0.000000	-2.982074	-2.295039
			(0.88378)	(0.56712)
0.000000	1.000000	0.000000	-12.58311	-8.674348
			(3.05121)	(1.95794)
0.000000	0.000000	1.000000	-4.129130	-4.370334
			(1.68090)	(1.07863)

Adjustment coefficients (standard error in parentheses)

D(TAXREVS)	-1.356338	0.096854	0.546154
	(0.22375)	(0.02307)	(0.08980)
D(OREVS)	-3.379246	0.423454	0.969406
	(3.21938)	(0.33198)	(1.29211)
D(CEXPS)	-0.239776	0.031372	0.045741
	(0.24750)	(0.02552)	(0.09934)
D(REXPS)	-0.207406	-0.133004	0.311395
	(0.37160)	(0.03832)	(0.14914)
D(DEFS)	0.232566	0.174333	-0.313424
	(1.40829)	(0.14522)	(0.56522)

4 Cointegrating Equation(s):	Log likelihood	-911.7585		

Normalized cointegrating coefficients (standard error in parentheses)

TAXREVS	OREVS	CEXPS	REXPS	DEFS
1.000000	0.000000	0.000000	0.000000	1.890900
				(0.27569)
0.000000	1.000000	0.000000	0.000000	8.988568
				(1.38939)
0.000000	0.000000	1.000000	0.000000	1.425726
				(0.24792)
0.000000	0.000000	0.000000	1.000000	1.403700
				(0.18262)

Adjustment coefficients (standard error in parentheses)

D(TAXREVS)	-1.376326	0.104129	0.524372	0.572434
	(0.23442)	(0.03466)	(0.11854)	(0.12354)
D(OREVS)	-0.721526	-0.543780	3.865571	0.532677
	(2.81679)	(0.41650)	(1.42438)	(1.48443)
D(CEXPS)	-0.392235	0.086857	-0.120396	0.143643
	(0.23668)	(0.03500)	(0.11968)	(0.12473)
D(REXPS)	-0.172049	-0.145872	0.349925	1.003476
	(0.38922)	(0.05755)	(0.19682)	(0.20511)
D(DEFS)	0.282310	0.156230	-0.259217	-1.597007
	(1.47766)	(0.21849)	(0.74722)	(0.77872)

APPENDIX II(C)iv: JOHANSON COINTEGRATION TEST (SUB SAHARAN AFRICA) POV

Date: 02/06/20 Time: 17:55
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments
Trend assumption: Linear deterministic trend
Series: TAXREVS OREVS CEXPS REXPS DEFS
Exogenous series: POVS__
Warning: Critical values assume no exogenous series

Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.809482	122.1009	69.81889	0.0000
At most 1 *	0.714525	72.36059	47.85613	0.0001
At most 2 *	0.514025	34.75260	29.79707	0.0124
At most 3	0.332463	13.10468	15.49471	0.1110
At most 4	0.032135	0.979876	3.841466	0.3222

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.809482	49.74032	33.87687	0.0003
At most 1 *	0.714525	37.60799	27.58434	0.0019
At most 2 *	0.514025	21.64792	21.13162	0.0423
At most 3	0.332463	12.12480	14.26460	0.1060
At most 4	0.032135	0.979876	3.841466	0.3222

Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

TAXREVS	OREVS	CEXPS	REXPS	DEFS
-0.003660	-0.001086	0.003652	0.009523	0.001345
0.020095	-0.002086	-0.006589	-0.006246	0.001337
0.000617	0.000528	-0.003711	0.003083	0.003335
-0.002853	0.002139	-0.008478	-0.001954	-0.001032
-0.014456	-0.000740	-0.006634	0.011765	-0.002064

Unrestricted Adjustment Coefficients (alpha):

D(TAXREVS)	24.19204	-61.28953	-18.18903	3.877035	-2.529152
D(OREVS)	-78.90730	-123.5385	-67.53862	-377.6192	22.81151
D(CEXPS)	-2.679380	-21.60789	38.44754	13.80875	1.172920
D(REXPS)	99.58008	-0.294785	40.22783	-16.12619	-6.321857
D(DEFS)	-122.5771	34.60907	-146.2879	28.57040	45.44650

1 Cointegrating Equation(s): Log likelihood -945.3283

Normalized cointegrating coefficients (standard error in parentheses)

TAXREVS	OREVS	CEXPS	REXPS	DEFS
1.000000	0.296631	-0.997650	-2.601711	-0.367490
	(0.08577)	(0.38452)	(0.30577)	(0.10932)

Adjustment coefficients (standard error in parentheses)

D(TAXREVS)	-0.088551

	(0.06186)
D(OREVS)	0.288828
	(0.53886)
D(CEXPS)	0.009807
	(0.05026)
D(REXPS)	-0.364498
	(0.06762)
D(DEFS)	0.448675
	(0.26300)

2 Cointegrating Equation(s): Log likelihood -926.5244

Normalized cointegrating coefficients (standard error in parentheses)

TAXREVS	OREVS	CEXPS	REXPS	DEFS
1.000000	0.000000	-0.501528	-0.904682	-0.045959
		(0.11876)	(0.06083)	(0.03424)
0.000000	1.000000	-1.672522	-5.721005	-1.083941
		(0.97322)	(0.49844)	(0.28054)

Adjustment coefficients (standard error in parentheses)

D(TAXREVS)	-1.320147	0.101573
	(0.21888)	(0.02520)
D(OREVS)	-2.193643	0.343357
	(2.95844)	(0.34060)
D(CEXPS)	-0.424397	0.047980
	(0.26418)	(0.03041)
D(REXPS)	-0.370421	-0.107507
	(0.37733)	(0.04344)
D(DEFS)	1.144135	0.060902
	(1.45980)	(0.16806)

3 Cointegrating Equation(s): Log likelihood -915.7004

Normalized cointegrating coefficients (standard error in parentheses)

TAXREVS	OREVS	CEXPS	REXPS	DEFS
1.000000	0.000000	0.000000	-2.231236	-0.829698
			(0.28780)	(0.16907)
0.000000	1.000000	0.000000	-10.14487	-3.697595
			(1.10687)	(0.65022)
0.000000	0.000000	1.000000	-2.645028	-1.562703
			(0.54556)	(0.32048)

Adjustment coefficients (standard error in parentheses)

D(TAXREVS)	-1.331372	0.091969	0.559714
	(0.20414)	(0.02408)	(0.08390)
D(OREVS)	-2.235322	0.307694	0.776564
	(2.94513)	(0.34735)	(1.21039)
D(CEXPS)	-0.400670	0.068281	-0.010095
	(0.20445)	(0.02411)	(0.08402)
D(REXPS)	-0.345596	-0.086265	0.216282
	(0.33435)	(0.03943)	(0.13741)
D(DEFS)	1.053857	-0.016343	-0.132741
	(1.31407)	(0.15498)	(0.54005)

4 Cointegrating Equation(s): Log likelihood -909.6380

Normalized cointegrating coefficients (standard error in parentheses)

TAXREVS	OREVS	CEXPS	REXPS	DEFS

1.000000	0.000000	0.000000	0.000000	1.326392
				(0.19830)
0.000000	1.000000	0.000000	0.000000	6.105603
				(0.98030)
0.000000	0.000000	1.000000	0.000000	0.993242
				(0.19670)
0.000000	0.000000	0.000000	1.000000	0.966321
				(0.11324)

Adjustment coefficients (standard error in parentheses)

D(TAXREVS)	-1.342433	0.100262	0.526845	0.549561
	(0.20542)	(0.03208)	(0.11880)	(0.11907)
D(OREVS)	-1.158005	-0.500063	3.977922	0.549824
	(2.46648)	(0.38521)	(1.42651)	(1.42965)
D(CEXPS)	-0.440066	0.097819	-0.127162	0.201005
	(0.19729)	(0.03081)	(0.11410)	(0.11436)
D(REXPS)	-0.299589	-0.120760	0.352995	1.105692
	(0.33006)	(0.05155)	(0.19089)	(0.19131)
D(DEFS)	0.972348	0.044772	-0.374953	-1.890332
	(1.32085)	(0.20629)	(0.76393)	(0.76560)

APPENDIX III(a)i: VECTOR ERROR CORRECTION RESULTS (NIGERIA) GDP

Vector Error Correction Estimates
Date: 10/22/19 Time: 13:51
Sample (adjusted): 1988 2017
Included observations: 27 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1	CointEq2	CointEq3	CointEq4	CointEq5	
GDPN(-1)	1.000000	0.000000	0.000000	0.000000	0.000000	
TAXREVN(-1)	0.000000	1.000000	0.000000	0.000000	0.000000	
OREVN(-1)	0.000000	0.000000	1.000000	0.000000	0.000000	
CEXPN(-1)	0.000000	0.000000	0.000000	1.000000	0.000000	
REXPN(-1)	0.000000	0.000000	0.000000	0.000000	1.000000	
DEFN(-1)	6368.284	127.2702	239.7970	10.62137	179.6515	
	(1754.64)	(34.9742)	(66.2806)	(2.88397)	(49.3274)	
	[3.62940]	[3.63897]	[3.61791]	[3.68289]	[3.64203]	
C	2324619.	46076.30	86077.62	3539.820	65065.60	
Error Correction:	**D(GDPN)**	**D(TAXREVN)**	**D(OREVN)**	**D(CEXPN)**	**D(REXPN)**	**D(DEFN)**
CointEq1	-0.268677	0.003477	-0.270789	-0.015117	-0.014868	-0.014921
	(0.07438)	(0.01967)	(0.06214)	(0.01118)	(0.02899)	(0.02092)
	[-3.61240]	[0.17677]	[-4.35808]	[-1.35182]	[-0.51280]	[-0.71336]
CointEq2	0.781918	-1.459326	-0.858190	-0.983929	-0.725946	0.524514
	(1.39435)	(0.36876)	(1.16487)	(0.20965)	(0.54355)	(0.39214)

	[0.56077]	[-3.95733]	[-0.73673]	[-4.69328]	[-1.33556]	[1.33757]
CointEq3	0.272270	0.009561	-0.566353	-0.104119	-0.054464	0.212938
	(0.37581)	(0.09939)	(0.31396)	(0.05650)	(0.14650)	(0.10569)
	[0.72449]	[0.09620]	[-1.80393]	[-1.84268]	[-0.37177]	[2.01475]
CointEq4	-0.949172	0.959488	3.254497	0.178254	0.192850	0.159420
	(1.40981)	(0.37285)	(1.17778)	(0.21197)	(0.54958)	(0.39649)
	[-0.67326]	[2.57337]	[2.76325]	[0.84094]	[0.35091]	[0.40208]
CointEq5	8.692671	0.839316	10.81600	1.365930	1.109741	-0.137770
	(3.14166)	(0.83087)	(2.62459)	(0.47236)	(1.22469)	(0.88354)
	[2.76691]	[1.01016]	[4.12102]	[2.89172]	[0.90614]	[-0.15593]
D(GDPN(-1))	0.109400	-0.022426	-0.515169	0.054461	0.112097	-0.190547
	(0.20232)	(0.05351)	(0.16902)	(0.03042)	(0.07887)	(0.05690)
	[0.54072]	[-0.41911]	[-3.04792]	[1.79032]	[1.42129]	[-3.34881]
D(TAXREVN(-1))	0.261227	0.331998	-1.787768	0.848777	1.161493	-1.243218
	(1.33000)	(0.35175)	(1.11110)	(0.19997)	(0.51846)	(0.37404)
	[0.19641]	[0.94386]	[-1.60900]	[4.24451]	[2.24026]	[-3.32375]
D(OREVN(-1))	-0.234581	-0.098798	-0.114074	-0.066888	-0.135254	-0.015194
	(0.17699)	(0.04681)	(0.14786)	(0.02661)	(0.06899)	(0.04978)
	[-1.32539]	[-2.11068]	[-0.77150]	[-2.51356]	[-1.96035]	[-0.30525]
D(CEXPN(-1))	1.125744	-0.692893	1.287433	-1.164013	-3.093903	1.891982
	(1.70382)	(0.45061)	(1.42340)	(0.25617)	(0.66419)	(0.47917)
	[0.66072]	[-1.53768]	[0.90448]	[-4.54382]	[-4.65819]	[3.94845]
D(REXPN(-1))	-3.131949	-0.942032	-5.850303	-1.239080	-1.381457	0.352334
	(3.00075)	(0.79361)	(2.50687)	(0.45117)	(1.16976)	(0.84391)
	[-1.04372]	[-1.18702]	[-2.33371]	[-2.74635]	[-1.18098]	[0.41750]
D(DEFN(-1))	-5.800159	0.179642	-2.751518	-1.010316	-4.126292	1.524717
	(2.25948)	(0.59756)	(1.88760)	(0.33972)	(0.88080)	(0.63544)
	[-2.56703]	[0.30062]	[-1.45768]	[-2.97396]	[-4.68474]	[2.39946]
C	3199.783	297.7079	2517.046	-21.60457	-114.0917	553.9852
	(807.654)	(213.600)	(674.727)	(121.434)	(314.841)	(227.139)
	[3.96183]	[1.39376]	[3.73047]	[-0.17791]	[-0.36238]	[2.43897]
R-squared	0.987469	0.770045	0.888429	0.845001	0.885559	0.899881
Adj. R-squared	0.978279	0.601412	0.806610	0.731336	0.801636	0.826461
Sum sq. resids	3987385.	278895.1	2782874.	90139.51	605928.3	315371.7
S.E. equation	515.5829	136.3562	430.7261	77.51968	200.9856	144.9992
F-statistic	107.4535	4.566383	10.85852	7.434099	10.55204	12.25657
Log likelihood	-198.9993	-163.0885	-194.1440	-147.8406	-173.5635	-164.7479
Akaike AIC	15.62958	12.96952	15.26992	11.84004	13.74545	13.09244
Schwarz SC	16.20550	13.54545	15.84585	12.41597	14.32137	13.66836
Mean dependent	3319.988	85.17296	64.53333	37.61000	219.4852	-94.90630
S.D. dependent	3498.298	215.9795	979.4554	149.5571	451.2674	348.0705

Determinant resid covariance (dof adj.)	1.33E+26
Determinant resid covariance	3.92E+24
Log likelihood	-994.3334
Akaike information criterion	81.20988
Schwarz criterion	86.10527
Number of coefficients	102

Dependent Variable: D(GDPN)
Method: Least Squares (Gauss-Newton / Marquardt steps)
Date: 10/22/19 Time: 13:58
Sample (adjusted): 1988 2017
Included observations: 28 after adjustments
D(GDPN) = C(1)*(GDPN(-1) + 6368.28402654*DEFN(-1) + 2324619.41811
) + C(2)*(TAXREVN(-1) + 127.270215842*DEFN(-1) + 46076.3032041
) + C(3)*(OREVN(-1) + 239.797031713*DEFN(-1) + 86077.6177089) +
C(4)*(CEXPN(-1) + 10.6213707501*DEFN(-1) + 3539.82011355) +
C(5)*(REXPN(-1) + 179.651461582*DEFN(-1) + 65065.5990817) +
C(6)*D(GDPN(-1)) + C(7)*D(TAXREVN(-1)) + C(8)*D(OREVN(-1)) +
C(9)*D(CEXPN(-1)) + C(10)*D(REXPN(-1)) + C(11)*D(DEFN(-1)) +
C(12)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.195217	0.086542	-2.255742	0.0384
C(2)	-1.540297	1.434737	-1.073574	0.2989
C(3)	0.182970	0.460997	0.396901	0.6967
C(4)	-1.462862	1.722178	-0.849425	0.4082
C(5)	7.871877	3.851338	2.043933	0.0578
C(6)	0.327398	0.232756	1.406616	0.1787
C(7)	2.830940	1.262660	2.242045	0.0395
C(8)	-0.362283	0.211543	-1.712573	0.1061
C(9)	0.225852	2.064527	0.109397	0.9142
C(10)	-4.142273	3.669527	-1.128830	0.2756
C(11)	-6.491467	2.766043	-2.346842	0.0321
C(12)	2457.349	947.1688	2.594415	0.0196

R-squared	0.979961	Mean dependent var	3384.548
Adjusted R-squared	0.966184	S.D. dependent var	3449.860
S.E. of regression	634.4012	Akaike info criterion	16.04077
Sum squared resid	6439439.	Schwarz criterion	16.61171
Log likelihood	-212.5707	Hannan-Quinn criter.	16.21531
F-statistic	71.13029	Durbin-Watson stat	1.399841
Prob(F-statistic)	0.000000		

APPENDIX III(a)ii: VECTOR ERROR CORRECTION RESULTS (NIGERIA) POVN

Vector Error Correction Estimates
Date: 10/22/19 Time: 14:56
Sample (adjusted): 1988 2017
Included observations: 27 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1	CointEq2	CointEq3	CointEq4	CointEq5
POVINN(-1)	1.000000	0.000000	0.000000	0.000000	0.000000
TAXREVN(-1)	0.000000	1.000000	0.000000	0.000000	0.000000
OREVN(-1)	0.000000	0.000000	1.000000	0.000000	0.000000
CEXPN(-1)	0.000000	0.000000	0.000000	1.000000	0.000000
REXPN(-1)	0.000000	0.000000	0.000000	0.000000	1.000000

DEFN(-1)	1.563793	-7.823532	-75.67566	23.22630	-28.69616
	(0.34560)	(2.18298)	(17.7664)	(5.07509)	(6.97066)
	[4.52492]	[-3.58388]	[-4.25948]	[4.57653]	[-4.11671]
C	527.3771	-3761.181	-30303.53	8189.908	-11796.00

Error Correction:	D(POVINN)	D(TAXREVN)	D(OREVN)	D(CEXPN)	D(REXPN)	D(DEFN)
CointEq1	0.179601	-5.845963	-31.12448	7.846309	11.96898	-8.564277
	(0.22570)	(4.75986)	(22.3153)	(2.83375)	(6.24291)	(5.57424)
	[0.79574]	[-1.22818]	[-1.39476]	[2.76888]	[1.91721]	[-1.53640]
CointEq2	0.027091	-1.541927	-3.522993	-0.734622	-0.575549	0.002959
	(0.02048)	(0.43181)	(2.02441)	(0.25707)	(0.56635)	(0.50568)
	[1.32308]	[-3.57088]	[-1.74026]	[-2.85764]	[-1.01625]	[0.00585]
CointEq3	0.006121	-0.040675	-0.489347	0.021967	0.069021	0.089574
	(0.00419)	(0.08843)	(0.41458)	(0.05265)	(0.11598)	(0.10356)
	[1.45977]	[-0.45997]	[-1.18034]	[0.41726]	[0.59510]	[0.86494]
CointEq4	-0.026507	1.039361	3.583947	0.029443	0.111228	0.234859
	(0.01972)	(0.41598)	(1.95019)	(0.24765)	(0.54558)	(0.48715)
	[-1.34384]	[2.49861]	[1.83774]	[0.11889]	[0.20387]	[0.48211]
CointEq5	-0.034609	1.056884	3.357381	0.581430	0.674594	-0.486677
	(0.02215)	(0.46711)	(2.18991)	(0.27809)	(0.61265)	(0.54703)
	[-1.56251]	[2.26261]	[1.53311]	[2.09080]	[1.10111]	[-0.88968]
D(POVINN(-1))	-0.103525	-1.689018	60.15646	-0.692404	4.476885	6.580200
	(0.34222)	(7.21712)	(33.8356)	(4.29667)	(9.46580)	(8.45192)
	[-0.30251]	[-0.23403]	[1.77791]	[-0.16115]	[0.47295]	[0.77854]
D(TAXREVN(-1))	0.002788	0.250494	1.644664	0.763655	1.159947	-0.506981
	(0.01680)	(0.35432)	(1.66116)	(0.21094)	(0.46472)	(0.41495)
	[0.16595]	[0.70696]	[0.99007]	[3.62017]	[2.49600]	[-1.22180]
D(OREVN(-1))	-0.001689	-0.096340	0.092125	-0.075126	-0.111844	-0.007514
	(0.00246)	(0.05191)	(0.24334)	(0.03090)	(0.06808)	(0.06079)
	[-0.68604]	[-1.85607]	[0.37858]	[-2.43116]	[-1.64289]	[-0.12362]
D(CEXPN(-1))	-0.017955	-0.454571	0.467478	-1.347359	-3.418212	1.701060
	(0.02216)	(0.46728)	(2.19071)	(0.27819)	(0.61287)	(0.54723)
	[-0.81032]	[-0.97281]	[0.21339]	[-4.84329]	[-5.57738]	[3.10851]
D(REXPN(-1))	0.035094	-1.132925	-1.326973	-0.440996	-0.881240	0.156122
	(0.02764)	(0.58293)	(2.73289)	(0.34704)	(0.76455)	(0.68266)
	[1.26962]	[-1.94351]	[-0.48556]	[-1.27073]	[-1.15262]	[0.22870]
D(DEFN(-1))	-0.012334	0.249536	-1.226953	-0.658697	-4.043682	1.115513
	(0.02276)	(0.47996)	(2.25018)	(0.28574)	(0.62951)	(0.56208)
	[-0.54195]	[0.51991]	[-0.54527]	[-2.30521]	[-6.42356]	[1.98461]
C	-5.334629	267.2510	54.52062	41.08117	146.1199	-57.21270
	(3.43041)	(72.3443)	(339.167)	(43.0697)	(94.8849)	(84.7218)
	[-1.55510]	[3.69416]	[0.16075]	[0.95383]	[1.53997]	[-0.67530]
R-squared	0.303133	0.792353	0.778078	0.846513	0.918178	0.890352
Adj. R-squared	-0.207903	0.640078	0.615335	0.733956	0.858175	0.809944
Sum sq. resids	566.2512	251839.9	5535322.	89260.54	433222.4	345387.9
S.E. equation	6.144109	129.5736	607.4714	77.14080	169.9456	151.7427
F-statistic	0.593173	5.203446	4.781032	7.520733	15.30227	11.07290

Log likelihood	-79.39455	-161.7110	-203.4275	-147.7083	-169.0341	-165.9753
Akaike AIC	6.769967	12.86748	15.95759	11.83024	13.40994	13.18335
Schwarz SC	7.345894	13.44341	16.53352	12.40617	13.98586	13.75928
Mean dependent	0.511111	85.17296	64.53333	37.61000	219.4852	-94.90630
S.D. dependent	5.590399	215.9795	979.4554	149.5571	451.2674	348.0705

Determinant resid covariance (dof adj.)	3.38E+22
Determinant resid covariance	9.95E+20
Log likelihood	-882.5859
Akaike information criterion	72.93229
Schwarz criterion	77.82767
Number of coefficients	102

Dependent Variable: POVINN
Method: Least Squares
Date: 10/22/19 Time: 14:35
Sample: 1986 2017
Included observations: 31

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	49.68182	1.856216	26.76511	0.0000
TAXREVN	-0.010461	0.003733	-2.802153	0.0097
OREVN	-0.000901	0.001182	-0.761963	0.4532
CEXPN	0.011678	0.009538	1.224321	0.2322
REXPN	0.008255	0.004517	1.827677	0.0796
DEFN	0.009435	0.007033	1.341520	0.1918

R-squared	0.304177	Mean dependent var	49.59677
Adjusted R-squared	0.165013	S.D. dependent var	6.924713
S.E. of regression	6.327639	Akaike info criterion	6.699717
Sum squared resid	1000.975	Schwarz criterion	6.977263
Log likelihood	-97.84561	Hannan-Quinn criter.	6.790190
F-statistic	2.185740	Durbin-Watson stat	0.746629
Prob(F-statistic)	0.087979		

APPENDIX III(a)iii: VECTOR ERROR CORRECTION RESULTS (NIGERIA) UNPN

Vector Error Correction Estimates
Date: 10/22/19 Time: 14:39
Sample (adjusted): 1988 2017
Included observations: 27 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1	CointEq2	CointEq3
UNPN(-1)	1.000000	0.000000	0.000000
TAXREVN(-1)	0.000000	1.000000	0.000000
OREVN(-1)	0.000000	0.000000	1.000000
CEXPN(-1)	-0.197726	-0.796527	-15.83504
	(0.03420)	(0.09341)	(2.69449)
	[-5.78091]	[-8.52743]	[-5.87682]
REXPN(-1)	-0.051597	-0.671374	-6.774282
	(0.01816)	(0.04961)	(1.43094)

	[-2.84064]	[-13.5344]	[-4.73416]
DEFN(-1)	-0.195120	-0.071610	-18.06734
	(0.04580)	(0.12507)	(3.60771)
	[-4.26069]	[-0.57258]	[-5.00799]
C	56.99538	212.2319	5137.324

Error Correction:	D(UNPN)	D(TAXREVN)	D(OREVN)	D(CEXPN)	D(REXPN)	D(DEFN)
CointEq1	-0.014566	2.837847	69.61711	6.189119	7.592230	-8.995123
	(0.13714)	(5.37316)	(27.2855)	(4.30165)	(9.47411)	(7.43430)
	[-0.10621]	[0.52815]	[2.55143]	[1.43878]	[0.80137]	[-1.20995]
CointEq2	-0.009202	-1.629025	-4.283660	-0.998454	-0.869653	0.095598
	(0.00907)	(0.35523)	(1.80390)	(0.28439)	(0.62635)	(0.49150)
	[-1.01497]	[-4.58582]	[-2.37466]	[-3.51085]	[-1.38844]	[0.19450]
CointEq3	0.000247	-0.019850	-0.766710	-0.055728	-0.111047	0.117636
	(0.00168)	(0.06585)	(0.33441)	(0.05272)	(0.11612)	(0.09112)
	[0.14681]	[-0.30142]	[-2.29269]	[-1.05703]	[-0.95635]	[1.29106]
D(UNPN(-1))	-0.310549	-12.13656	-89.26368	-19.21219	-4.464312	2.544551
	(0.23867)	(9.35109)	(47.4860)	(7.48631)	(16.4881)	(12.9382)
	[-1.30115]	[-1.29788]	[-1.87979]	[-2.56631]	[-0.27076]	[0.19667]
D(TAXREVN(-1))	0.006130	0.574918	0.794630	0.571918	0.656153	-0.433575
	(0.00700)	(0.27427)	(1.39279)	(0.21958)	(0.48361)	(0.37948)
	[0.87569]	[2.09615]	[0.57053]	[2.60463]	[1.35679]	[-1.14254]
D(OREVN(-1))	-0.000327	-0.106814	-0.020990	-0.080638	-0.086458	-0.008452
	(0.00115)	(0.04495)	(0.22827)	(0.03599)	(0.07926)	(0.06219)
	[-0.28509]	[-2.37621]	[-0.09195]	[-2.24075]	[-1.09082]	[-0.13590]
D(CEXPN(-1))	-0.015588	-0.991868	5.813029	-0.554055	-2.066937	1.531900
	(0.00797)	(0.31229)	(1.58582)	(0.25001)	(0.55063)	(0.43208)
	[-1.95566]	[-3.17616]	[3.66562]	[-2.21613]	[-3.75376]	[3.54542]
D(REXPN(-1))	-0.009680	-1.187176	-3.375345	-0.686712	-1.320574	0.189396
	(0.01220)	(0.47809)	(2.42782)	(0.38275)	(0.84299)	(0.66149)
	[-0.79324]	[-2.48315]	[-1.39028]	[-1.79414]	[-1.56654]	[0.28632]
D(DEFN(-1))	-0.017449	-0.309160	2.450170	0.203571	-2.416552	0.679161
	(0.00728)	(0.28508)	(1.44767)	(0.22823)	(0.50266)	(0.39444)
	[-2.39804]	[-1.08447]	[1.69249]	[0.89196]	[-4.80752]	[1.72185]
C	1.414337	240.1486	580.3665	131.6407	307.9616	-85.98870
	(1.55570)	(60.9518)	(309.521)	(48.7969)	(107.472)	(84.3330)
	[0.90913]	[3.93997]	[1.87505]	[2.69773]	[2.86550]	[-1.01963]
R-squared	0.388934	0.776436	0.719674	0.701171	0.840788	0.835217
Adj. R-squared	0.065428	0.658079	0.571266	0.542967	0.756499	0.747979
Sum sq. resids	176.6353	271143.9	6992074.	173784.4	842980.8	519064.0
S.E. equation	3.223401	126.2919	641.3256	101.1069	222.6816	174.7375
F-statistic	1.202246	6.560105	4.849299	4.432072	9.975079	9.573980
Log likelihood	-63.66772	-162.7080	-206.5814	-156.7027	-178.0210	-171.4746
Akaike AIC	5.456868	12.79319	16.04307	12.34835	13.92748	13.44256
Schwarz SC	5.936808	13.27313	16.52301	12.82829	14.40742	13.92250
Mean dependent	0.718519	85.17296	64.53333	37.61000	219.4852	-94.90630
S.D. dependent	3.334325	215.9795	979.4554	149.5571	451.2674	348.0705

Determinant resid covariance (dof adj.)	6.58E+20
Determinant resid covariance	4.10E+19
Log likelihood	-839.5315
Akaike information criterion	67.96530
Schwarz criterion	71.70883
Number of coefficients	78

Dependent Variable: D(UNPN)
Method: Least Squares (Gauss-Newton / Marquardt steps)
Date: 10/22/19 Time: 14:41
Sample (adjusted): 1988 2017
Included observations: 28 after adjustments
D(UNPN) = C(1)*(UNPN(-1) - 0.197725917378*CEXPN(-1) -
0.0515973117784*REXPN(-1) - 0.195119933944*DEFN(-1) +
56.9953772603) + C(2)*(TAXREVN(-1) - 0.79652652525*CEXPN(-1) -
0.671373586495*REXPN(-1) - 0.0716101880571*DEFN(-1) +
212.231875476) + C(3)*(OREVN(-1) - 15.835036155*CEXPN(-1) -
6.77428151895*REXPN(-1) - 18.0673376285*DEFN(-1) +
5137.32395878) + C(4)*D(UNPN(-1)) + C(5)*D(TAXREVN(-1)) + C(6)
*D(OREVN(-1)) + C(7)*D(CEXPN(-1)) + C(8)*D(REXPN(-1)) + C(9)
*D(DEFN(-1)) + C(10)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.046935	0.139554	-0.336318	0.7405
C(2)	-0.002582	0.008099	-0.318762	0.7536
C(3)	0.000386	0.001730	0.223215	0.8259
C(4)	-0.263594	0.243861	-1.080921	0.2940
C(5)	-0.000750	0.005344	-0.140272	0.8900
C(6)	0.000435	0.001054	0.412545	0.6848
C(7)	-0.009821	0.007142	-1.375129	0.1860
C(8)	-0.002490	0.011516	-0.216266	0.8312
C(9)	-0.013247	0.006893	-1.921910	0.0706
C(10)	0.978826	1.574431	0.621702	0.5419

R-squared	0.348310	Mean dependent var	0.864286
Adjusted R-squared	0.022465	S.D. dependent var	3.361681
S.E. of regression	3.323707	Akaike info criterion	5.512491
Sum squared resid	198.8465	Schwarz criterion	5.988279
Log likelihood	-67.17488	Hannan-Quinn criter.	5.657944
F-statistic	1.068944	Durbin-Watson stat	2.147024
Prob(F-statistic)	0.429168		

APPENDIX III(a)iv: VECTOR ERROR CORRECTION RESULTS (NIGERIA) HDI

Vector Error Correction Estimates
Date: 10/22/19 Time: 14:45
Sample (adjusted): 1988 2017
Included observations: 27 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1	CointEq2	CointEq3
HDIN(-1)	1.000000	0.000000	0.000000
TAXREVN(-1)	0.000000	1.000000	0.000000

OREVN(-1)	0.000000	0.000000	1.000000
CEXPN(-1)	0.000521	-0.481697	1.302050
	(0.00052)	(0.06272)	(1.26106)
	[0.99556]	[-7.67950]	[1.03250]
REXPN(-1)	0.001380	-0.450324	-0.448885
	(0.00027)	(0.03176)	(0.63849)
	[5.20397]	[-14.1796]	[-0.70304]
DEFN(-1)	0.003295	0.516238	2.366810
	(0.00063)	(0.07578)	(1.52344)
	[5.20957]	[6.81273]	[1.55360]
C	-0.918905	42.52603	-1462.686

Error Correction:	D(HDIN)	D(TAXREVN)	D(OREVN)	D(CEXPN)	D(REXPN)	D(DEFN)
CointEq1	0.062922	144.6385	1820.261	329.5476	691.8888	-362.2927
	(0.12359)	(168.216)	(790.844)	(98.0112)	(234.357)	(206.432)
	[0.50910]	[0.85984]	[2.30167]	[3.36235]	[2.95229]	[-1.75502]
CointEq2	-0.000374	-1.427974	-4.709620	-1.189628	-1.362832	0.273341
	(0.00028)	(0.38415)	(1.80605)	(0.22383)	(0.53520)	(0.47143)
	[-1.32439]	[-3.71719]	[-2.60769]	[-5.31492]	[-2.54639]	[0.57981]
CointEq3	-2.52E-05	0.025294	-0.877619	-0.127734	-0.212901	0.168317
	(5.3E-05)	(0.07242)	(0.34048)	(0.04220)	(0.10090)	(0.08887)
	[-0.47310]	[0.34927]	[-2.57763]	[-3.02716]	[-2.11011]	[1.89390]
D(HDIN(-1))	-0.202203	-172.7236	-2071.538	-900.2945	-469.8664	258.6853
	(0.25033)	(340.709)	(1601.80)	(198.515)	(474.674)	(418.113)
	[-0.80774]	[-0.50695]	[-1.29326]	[-4.53515]	[-0.98987]	[0.61870]
D(TAXREVN(-1))	0.000282	0.491457	1.207161	0.679632	0.926144	-0.542965
	(0.00022)	(0.29879)	(1.40472)	(0.17409)	(0.41627)	(0.36667)
	[1.28532]	[1.64483]	[0.85936]	[3.90391]	[2.22486]	[-1.48080]
D(OREVN(-1))	-1.53E-05	-0.116244	0.001044	-0.051663	-0.075027	-0.020783
	(3.4E-05)	(0.04619)	(0.21718)	(0.02692)	(0.06436)	(0.05669)
	[-0.45186]	[-2.51640]	[0.00481]	[-1.91947]	[-1.16577]	[-0.36662]
D(CEXPN(-1))	-0.000227	-1.005421	5.085537	-0.495953	-1.743272	1.397611
	(0.00026)	(0.35055)	(1.64804)	(0.20425)	(0.48838)	(0.43018)
	[-0.88285]	[-2.86816]	[3.08580]	[-2.42821]	[-3.56951]	[3.24886]
D(REXPN(-1))	-0.000449	-0.929892	-3.904089	-1.076597	-2.170636	0.494913
	(0.00038)	(0.52040)	(2.44660)	(0.30321)	(0.72502)	(0.63863)
	[-1.17394]	[-1.78687]	[-1.59572]	[-3.55063]	[-2.99390]	[0.77496]
D(DEFN(-1))	-0.000310	-0.259747	1.713970	0.024786	-2.763132	0.832406
	(0.00024)	(0.32311)	(1.51906)	(0.18826)	(0.45015)	(0.39652)
	[-1.30559]	[-0.80390]	[1.12831]	[0.13166]	[-6.13819]	[2.09930]
C	0.060585	206.4033	595.0027	178.8169	402.1449	-117.8141
	(0.04701)	(63.9826)	(300.806)	(37.2796)	(89.1401)	(78.5185)
	[1.28877]	[3.22593]	[1.97803]	[4.79664]	[4.51138]	[-1.50046]
R-squared	0.165323	0.745105	0.726053	0.819536	0.886671	0.852201
Adj. R-squared	-0.276565	0.610160	0.581023	0.723996	0.826673	0.773954
Sum sq. resids	0.166887	309143.4	6832955.	104949.1	600043.2	465565.3

S.E. equation	0.099080	134.8514	633.9862	78.57148	187.8740	165.4877
F-statistic	0.374129	5.521566	5.006211	8.577942	14.77841	10.89119
Log likelihood	30.35335	-164.4786	-206.2707	-149.8942	-173.4318	-170.0061
Akaike AIC	-1.507656	12.92434	16.02005	11.84401	13.58754	13.33379
Schwarz SC	-1.027716	13.40428	16.49999	12.32395	14.06748	13.81373
Mean dependent	0.019370	85.17296	64.53333	37.61000	219.4852	-94.90630
S.D. dependent	0.087693	215.9795	979.4554	149.5571	451.2674	348.0705

Determinant resid covariance (dof adj.)	3.08E+17
Determinant resid covariance	1.92E+16
Log likelihood	-736.0375
Akaike information criterion	60.29907
Schwarz criterion	64.04260
Number of coefficients	78

Dependent Variable: HDIN
Method: Least Squares
Date: 10/22/19 Time: 14:50
Sample: 1986 2017
Included observations: 31

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.049618	0.042193	1.175963	0.2507
TAXREVN	-3.39E-05	8.49E-05	-0.398971	0.6933
OREVN	1.03E-05	2.69E-05	0.382578	0.7053
CEXPN	0.000416	0.000217	1.920658	0.0663
REXPN	7.51E-05	0.000103	0.731357	0.4714
DEFN	9.57E-05	0.000160	0.598771	0.5547

R-squared	0.712510	Mean dependent var	0.282161
Adjusted R-squared	0.655012	S.D. dependent var	0.244881
S.E. of regression	0.143833	Akaike info criterion	-0.868345
Sum squared resid	0.517197	Schwarz criterion	-0.590800
Log likelihood	19.45935	Hannan-Quinn criter.	-0.777872
F-statistic	12.39192	Durbin-Watson stat	0.460734
Prob(F-statistic)	0.000004		

APPENDIX III(b)i: VECTOR ERROR CORRECTION RESULTS (GHANA)

Vector Error Correction Estimates
Date: 10/22/19 Time: 15:05
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1	CointEq2
UNPG(-1)	1.000000	0.000000
TAXREVG(-1)	0.000000	1.000000

OREVG(-1)	-0.003746	0.004517
	(0.00057)	(0.00065)
	[-6.60171]	[6.99357]
CEXPG(-1)	0.281076	-0.724307
	(0.09248)	(0.10528)
	[3.03936]	[-6.87994]
REXPG(-1)	-0.035392	0.112567
	(0.01634)	(0.01860)
	[-2.16628]	[6.05238]
DEFG(-1)	-0.002691	0.005906
	(0.00065)	(0.00073)
	[-4.16884]	[8.03618]
C	-10.94179	0.330618

Error Correction:	D(UNPG)	D(TAXREVG)	D(OREVG)	D(CEXPG)	D(REXPG)	D(DEFG)
CointEq1	-0.038768	-0.241695	64.41132	-1.172934	-1.936602	-53.86321
	(0.06469)	(0.15151)	(60.0399)	(0.47233)	(0.31819)	(90.2962)
	[-0.59930]	[-1.59519]	[1.07281]	[-2.48328]	[-6.08626]	[-0.59652]
CointEq2	-0.083676	0.040469	-70.79820	-0.054078	-1.750222	-107.4243
	(0.06369)	(0.14918)	(59.1138)	(0.46505)	(0.31328)	(88.9034)
	[-1.31376]	[0.27128]	[-1.19766]	[-0.11629]	[-5.58668]	[-1.20833]
D(UNPG(-1))	0.301559	1.287517	-322.9573	2.255302	-1.057823	-46.89149
	(0.22393)	(0.52449)	(207.835)	(1.63503)	(1.10146)	(312.570)
	[1.34666]	[2.45482]	[-1.55391]	[1.37936]	[-0.96038]	[-0.15002]
D(TAXREVG(-1))	0.037546	0.066696	123.3901	0.330874	0.755975	162.2381
	(0.10928)	(0.25595)	(101.424)	(0.79790)	(0.53751)	(152.535)
	[0.34358]	[0.26058]	[1.21658]	[0.41468]	[1.40643]	[1.06361]
D(OREVG(-1))	9.91E-05	-0.000966	0.503751	-0.003066	0.001392	-0.567558
	(0.00026)	(0.00061)	(0.24165)	(0.00190)	(0.00128)	(0.36343)
	[0.38044]	[-1.58410]	[2.08460]	[-1.61254]	[1.08690]	[-1.56167]
D(CEXPG(-1))	-0.006174	-0.074612	-11.30835	-0.398717	-0.348787	-73.40342
	(0.02843)	(0.06658)	(26.3832)	(0.20756)	(0.13982)	(39.6787)
	[-0.21718]	[-1.12065]	[-0.42862]	[-1.92101]	[-2.49449]	[-1.84995]
D(REXPG(-1))	0.034915	-0.111655	17.26766	-0.275056	-0.591616	-12.07669
	(0.03297)	(0.07722)	(30.5998)	(0.24073)	(0.16217)	(46.0201)
	[1.05900]	[-1.44592]	[0.56431]	[-1.14260]	[-3.64814]	[-0.26242]
D(DEFG(-1))	0.000135	-0.000735	0.061470	0.000612	0.002819	0.214395
	(0.00022)	(0.00051)	(0.20116)	(0.00158)	(0.00107)	(0.30254)
	[0.62243]	[-1.44775]	[0.30557]	[0.38663]	[2.64464]	[0.70865]
C	0.095494	0.183631	50.50953	-0.268659	-3.545697	-56.89913
	(0.13656)	(0.31985)	(126.744)	(0.99709)	(0.67170)	(190.615)
	[0.69928]	[0.57412]	[0.39852]	[-0.26944]	[-5.27865]	[-0.29850]
R-squared	0.515942	0.350557	0.353437	0.371228	0.709844	0.371789
Adj. R-squared	0.331540	0.103151	0.107127	0.131696	0.599308	0.132471
Sum sq. resids	6.671058	36.59588	5746479.	355.6452	161.3993	12997521
S.E. equation	0.563622	1.320099	523.1079	4.115275	2.772306	786.7208
F-statistic	2.797908	1.416927	1.434930	1.549804	6.421852	1.553533

Log likelihood	-20.01687	-45.54923	-225.0117	-79.65920	-67.80841	-237.2542
Akaike AIC	1.934458	3.636615	15.60078	5.910613	5.120561	16.41695
Schwarz SC	2.354817	4.056975	16.02114	6.330972	5.540920	16.83731
Mean dependent	0.014333	0.436667	81.25000	0.026667	-2.236667	-75.53333
S.D. dependent	0.689366	1.393948	553.6006	4.416344	4.379614	844.6534

Determinant resid covariance (dof adj.)	1.71E+12
Determinant resid covariance	2.01E+11
Log likelihood	-645.8335
Akaike information criterion	47.45557
Schwarz criterion	50.53820
Number of coefficients	66

Dependent Variable: D(UNPG)
Method: Least Squares (Gauss-Newton / Marquardt steps)
Date: 10/22/19 Time: 15:07
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments
D(UNPG) = C(1)*(UNPG(-1) - 0.0037457723005*OREVG(-1) +
0.281076363112*CEXPG(-1) - 0.0353920731521*REXPG(-1) -
0.00269109263322*DEFG(-1) - 10.941786087) + C(2)*(TAXREVG(-1)
+ 0.0045173004499*OREVG(-1) - 0.724306950592*CEXPG(-1) +
0.112567371852*REXPG(-1) + 0.00590552513233*DEFG(-1) +
0.330617925829) + C(3)*D(UNPG(-1)) + C(4)*D(TAXREVG(-1)) + C(5)
*D(OREVG(-1)) + C(6)*D(CEXPG(-1)) + C(7)*D(REXPG(-1)) + C(8)
*D(DEFG(-1)) + C(9)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.038768	0.064690	-0.599296	0.5554
C(2)	-0.083676	0.063692	-1.313759	0.2031
C(3)	0.301559	0.223931	1.346659	0.1924
C(4)	0.037546	0.109279	0.343579	0.7346
C(5)	9.91E-05	0.000260	0.380444	0.7074
C(6)	-0.006174	0.028427	-0.217182	0.8302
C(7)	0.034915	0.032970	1.058997	0.3016
C(8)	0.000135	0.000217	0.622433	0.5404
C(9)	0.095494	0.136560	0.699277	0.4921

R-squared	0.515942	Mean dependent var	0.014333
Adjusted R-squared	0.331540	S.D. dependent var	0.689366
S.E. of regression	0.563622	Akaike info criterion	1.934458
Sum squared resid	6.671058	Schwarz criterion	2.354817
Log likelihood	-20.01687	Hannan-Quinn criter.	2.068935
F-statistic	2.797908	Durbin-Watson stat	2.082031
Prob(F-statistic)	0.028028		

APPENDIX III(b)ii: VECTOR ERROR CORRECTION RESULTS (GHANA) GDP

Vector Error Correction Estimates
Date: 10/22/19 Time: 15:11
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1	CointEq2	CointEq3

GDPG(-1)	1.000000	0.000000	0.000000
TAXREVG(-1)	0.000000	1.000000	0.000000
OREVG(-1)	0.000000	0.000000	1.000000
CEXPG(-1)	-0.924897	-0.336069	-63.21040
	(0.19245)	(0.04460)	(32.7399)
	[-4.80598]	[-7.53466]	[-1.93068]
REXPG(-1)	0.394081	0.118514	2.286956
	(0.04461)	(0.01034)	(7.58954)
	[8.83357]	[11.4622]	[0.30133]
DEFG(-1)	0.004892	0.000860	0.370984
	(0.00064)	(0.00015)	(0.10850)
	[7.67035]	[5.81640]	[3.41925]
C	-14.88848	-10.78878	829.9098

Error Correction:	D(GDPG)	D(TAXREVG)	D(OREVG)	D(CEXPG)	D(REXPG)	D(DEFG)
CointEq1	-0.557031	0.083108	46.10267	0.761914	0.474561	75.18356
	(0.20701)	(0.06681)	(29.1802)	(0.10466)	(0.21284)	(40.0111)
	[-2.69090]	[1.24395]	[1.57993]	[7.27968]	[2.22963]	[1.87907]
CointEq2	0.553802	-0.524046	35.49170	1.537856	-1.938861	-0.507769
	(0.71186)	(0.22975)	(100.346)	(0.35992)	(0.73193)	(137.592)
	[0.77797]	[-2.28096]	[0.35369]	[4.27278]	[-2.64897]	[-0.00369]
CointEq3	0.004562	0.000311	-0.405053	-0.001919	-0.001626	-0.171111
	(0.00144)	(0.00046)	(0.20235)	(0.00073)	(0.00148)	(0.27746)
	[3.17793]	[0.67158]	[-2.00172]	[-2.64408]	[-1.10131]	[-0.61671]
D(GDPG(-1))	-0.417611	-0.110591	-39.06708	-0.628656	-0.159355	-40.96478
	(0.21181)	(0.06836)	(29.8576)	(0.10709)	(0.21778)	(40.9398)
	[-1.97163]	[-1.61777]	[-1.30845]	[-5.87022]	[-0.73171]	[-1.00061]
D(TAXREVG(-1))	-0.039352	0.424366	95.58829	-0.806014	0.576093	74.84750
	(0.83680)	(0.27007)	(117.958)	(0.42309)	(0.86039)	(161.741)
	[-0.04703]	[1.57131]	[0.81036]	[-1.90507]	[0.66957]	[0.46276]
D(OREVG(-1))	-4.49E-06	-0.000125	0.391581	0.000424	0.002255	-0.679494
	(0.00160)	(0.00052)	(0.22586)	(0.00081)	(0.00165)	(0.30969)
	[-0.00281]	[-0.24180]	[1.73374]	[0.52293]	[1.36862]	[-2.19410]
D(CEXPG(-1))	0.240198	-0.118043	13.03267	-0.013690	-0.108051	-43.78082
	(0.20235)	(0.06531)	(28.5242)	(0.10231)	(0.20806)	(39.1115)
	[1.18704]	[-1.80749]	[0.45690]	[-0.13381]	[-0.51933]	[-1.11938]
D(REXPG(-1))	0.251115	-0.148089	-14.90472	-0.519493	-0.377673	-34.78529
	(0.23294)	(0.07518)	(32.8364)	(0.11778)	(0.23951)	(45.0243)
	[1.07801]	[-1.96977]	[-0.45391]	[-4.41082]	[-1.57685]	[-0.77259]
D(DEFG(-1))	-0.004419	-0.000703	-0.412185	-0.002268	-0.000533	-0.279490
	(0.00144)	(0.00046)	(0.20264)	(0.00073)	(0.00148)	(0.27786)
	[-3.07382]	[-1.51509]	[-2.03403]	[-3.11969]	[-0.36058]	[-1.00587]
C	2.518933	0.115332	1.141992	-0.248530	-3.244727	-71.99255
	(0.95906)	(0.30953)	(135.192)	(0.48491)	(0.98610)	(185.372)
	[2.62646]	[0.37260]	[0.00845]	[-0.51253]	[-3.29045]	[-0.38837]

R-squared	0.617053	0.450992	0.335986	0.865768	0.435533	0.463713
Adj. R-squared	0.444726	0.203938	0.037179	0.805364	0.181522	0.222383
Sum sq. resids	296.9993	30.93643	5901583.	75.92386	313.9848	11095646
S.E. equation	3.853565	1.243713	543.2119	1.948382	3.962227	744.8371
F-statistic	3.580720	1.825481	1.124426	14.33292	1.714625	1.921493
Log likelihood	-76.95614	-43.02921	-225.4112	-56.49616	-77.79036	-234.8811
Akaike AIC	5.797076	3.535281	15.69408	4.433077	5.852691	16.32541
Schwarz SC	6.264142	4.002346	16.16114	4.900143	6.319757	16.79248
Mean dependent	1.797000	0.436667	81.25000	0.026667	-2.236667	-75.53333
S.D. dependent	5.171412	1.393948	553.6006	4.416344	4.379614	844.6534

Determinant resid covariance (dof adj.)	2.18E+13
Determinant resid covariance	1.91E+12
Log likelihood	-679.5945
Akaike information criterion	50.50630
Schwarz criterion	54.14941
Number of coefficients	78

Dependent Variable: D(GDPG)
Method: Least Squares (Gauss-Newton / Marquardt steps)
Date: 10/22/19 Time: 15:12
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments
D(GDPG) = C(1)*(GDPG(-1) - 0.924896885058*CEXPG(-1) + 0.394081458437*REXPG(-1) + 0.00489185527664*DEFG(-1) - 14.8884783556) + C(2)*(TAXREVG(-1) - 0.336069340486*CEXPG(-1) + 0.118514272951*REXPG(-1) + 0.000859738325425*DEFG(-1) - 10.7887792421) + C(3)*(OREVG(-1) - 63.2104008216*CEXPG(-1) + 2.28695644227*REXPG(-1) + 0.37098363681*DEFG(-1) + 829.90976773) + C(4)*D(GDPG(-1)) + C(5)*D(TAXREVG(-1)) + C(6) *D(OREVG(-1)) + C(7)*D(CEXPG(-1)) + C(8)*D(REXPG(-1)) + C(9) *D(DEFG(-1)) + C(10)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.557031	0.207006	-2.690900	0.0141
C(2)	0.553802	0.711859	0.777966	0.4457
C(3)	0.004562	0.001435	3.177929	0.0047
C(4)	-0.417611	0.211811	-1.971627	0.0626
C(5)	-0.039352	0.836798	-0.047027	0.9630
C(6)	-4.49E-06	0.001602	-0.002805	0.9978
C(7)	0.240198	0.202351	1.187036	0.2491
C(8)	0.251115	0.232943	1.078012	0.2939
C(9)	-0.004419	0.001438	-3.073816	0.0060
C(10)	2.518933	0.959060	2.626461	0.0162

R-squared	0.617053	Mean dependent var	1.797000
Adjusted R-squared	0.444726	S.D. dependent var	5.171412
S.E. of regression	3.853565	Akaike info criterion	5.797076
Sum squared resid	296.9993	Schwarz criterion	6.264142
Log likelihood	-76.95614	Hannan-Quinn criter.	5.946494
F-statistic	3.580720	Durbin-Watson stat	2.071306
Prob(F-statistic)	0.008388		

APPENDIX III(b)iii: VECTOR ERROR CORRECTION RESULTS (GHANA)POVERTY

Vector Error Correction Estimates
Date: 10/22/19 Time: 15:17
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1	CointEq2
POVG(-1)	1.000000	0.000000
TAXREVG(-1)	0.000000	1.000000
OREVG(-1)	0.002307	-0.000208
	(0.00118)	(0.00036)
	[1.96234]	[-0.58532]
CEXPG(-1)	0.012927	-0.076412
	(0.22079)	(0.06685)
	[0.05855]	[-1.14304]
REXPG(-1)	-0.168090	0.116368
	(0.04391)	(0.01330)
	[-3.82793]	[8.75239]
DEFG(-1)	-0.001206	-0.000387
	(0.00117)	(0.00035)
	[-1.03395]	[-1.09563]
C	-28.73519	-16.57956

Error Correction:	D(POVG)	D(TAXREVG)	D(OREVG)	D(CEXPG)	D(REXPG)	D(DEFG)
CointEq1	-0.088599	0.214713	-1.293240	0.287551	0.833237	2.191797
	(0.12249)	(0.04419)	(29.4836)	(0.19823)	(0.15857)	(35.1318)
	[-0.72330]	[4.85937]	[-0.04386]	[1.45061]	[5.25469]	[0.06239]
CointEq2	0.298209	-0.619620	-87.60058	1.402396	-2.040751	332.6612
	(0.45860)	(0.16543)	(110.384)	(0.74214)	(0.59367)	(131.530)
	[0.65026]	[-3.74561]	[-0.79360]	[1.88965]	[-3.43752]	[2.52917]
D(POVG(-1))	0.421400	-0.508338	-2.234650	0.021602	-0.262454	52.28251
	(0.21905)	(0.07901)	(52.7234)	(0.35448)	(0.28356)	(62.8236)
	[1.92380]	[-6.43356]	[-0.04238]	[0.06094]	[-0.92557]	[0.83221]
D(TAXREVG(-1))	-0.449905	0.395260	132.0300	-0.720703	0.521983	-144.9310
	(0.49261)	(0.17769)	(118.570)	(0.79718)	(0.63770)	(141.284)
	[-0.91331]	[2.22439]	[1.11352]	[-0.90406]	[0.81855]	[-1.02581]
D(OREVG(-1))	0.000299	-0.000609	0.111250	-0.000366	-0.000641	-0.646727
	(0.00088)	(0.00032)	(0.21123)	(0.00142)	(0.00114)	(0.25169)
	[0.34125]	[-1.92506]	[0.52668]	[-0.25790]	[-0.56452]	[-2.56949]
D(CEXPG(-1))	-0.100048	-0.048247	-1.734384	-0.468419	-0.117686	-76.06328
	(0.11571)	(0.04174)	(27.8518)	(0.18726)	(0.14979)	(33.1874)
	[-0.86461]	[-1.15589]	[-0.06227]	[-2.50148]	[-0.78565]	[-2.29193]
D(REXPG(-1))	-0.012759	-0.098427	18.95095	-0.245382	-0.328713	4.986012
	(0.12396)	(0.04471)	(29.8368)	(0.20060)	(0.16047)	(35.5526)

	[-0.10293]	[-2.20122]	[0.63515]	[-1.22323]	[-2.04845]	[0.14024]
D(DEFG(-1))	-0.001552	-5.80E-05	-0.222784	0.001817	-0.000468	-0.027617
	(0.00065)	(0.00023)	(0.15564)	(0.00105)	(0.00084)	(0.18546)
	[-2.40062]	[-0.24886]	[-1.43140]	[1.73605]	[-0.55860]	[-0.14891]
C	-0.483812	-0.137132	54.86783	-0.047378	-3.261618	67.83620
	(0.58050)	(0.20940)	(139.725)	(0.93942)	(0.75147)	(166.492)
	[-0.83344]	[-0.65489]	[0.39268]	[-0.05043]	[-4.34029]	[0.40744]
R-squared	0.360110	0.721545	0.213934	0.441665	0.636703	0.520559
Adj. R-squared	0.116343	0.615467	-0.085520	0.228966	0.498304	0.337915
Sum sq. resids	120.5906	15.69083	6986349.	315.8046	202.0840	9919500.
S.E. equation	2.396333	0.864397	576.7870	3.877926	3.102104	687.2824
F-statistic	1.477268	6.802028	0.714413	2.076480	4.600486	2.850131
Log likelihood	-63.43622	-32.84634	-227.9422	-77.87705	-71.18045	-233.2004
Akaike AIC	4.829081	2.789756	15.79615	5.791803	5.345363	16.14669
Schwarz SC	5.249440	3.210115	16.21651	6.212162	5.765722	16.56705
Mean dependent	-0.616667	0.436667	81.25000	0.026667	-2.236667	-75.53333
S.D. dependent	2.549207	1.393948	553.6006	4.416344	4.379614	844.6534

Determinant resid covariance (dof adj.)	1.46E+13
Determinant resid covariance	1.72E+12
Log likelihood	-678.0180
Akaike information criterion	49.60120
Schwarz criterion	52.68383
Number of coefficients	66

Dependent Variable: D(POVG)
Method: Least Squares (Gauss-Newton / Marquardt steps)
Date: 10/22/19 Time: 15:20
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments
D(POVG) = C(1)*(POVG(-1) + 0.00230680165107*OREVG(-1) +
0.0129268336795*CEXPG(-1) - 0.168089971854*REXPG(-1) -
0.00120551563962*DEFG(-1) - 28.7351909134) + C(2)*(TAXREVG(
-1) - 0.000208334697507*OREVG(-1) - 0.0764120390763*CEXPG(-1)
+ 0.116368297362*REXPG(-1) - 0.000386781736172*DEFG(-1) -
16.5795643702) + C(3)*D(POVG(-1)) + C(4)*D(TAXREVG(-1)) + C(5)
*D(OREVG(-1)) + C(6)*D(CEXPG(-1)) + C(7)*D(REXPG(-1)) + C(8)
*D(DEFG(-1)) + C(9)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.088599	0.122493	-0.723298	0.4775
C(2)	0.298209	0.458602	0.650257	0.5226
C(3)	0.421400	0.219046	1.923798	0.0680
C(4)	-0.449905	0.492612	-0.913306	0.3714
C(5)	0.000299	0.000878	0.341250	0.7363
C(6)	-0.100048	0.115714	-0.864613	0.3970
C(7)	-0.012759	0.123961	-0.102928	0.9190
C(8)	-0.001552	0.000647	-2.400623	0.0257
C(9)	-0.483812	0.580504	-0.833435	0.4140

R-squared	0.360110	Mean dependent var	-0.616667
Adjusted R-squared	0.116343	S.D. dependent var	2.549207
S.E. of regression	2.396333	Akaike info criterion	4.829081
Sum squared resid	120.5906	Schwarz criterion	5.249440
Log likelihood	-63.43622	Hannan-Quinn criter.	4.963558

F-statistic	1.477268	Durbin-Watson stat	2.203450
Prob(F-statistic)	0.224259		

APPENDIX III(b)iv: VECTOR ERROR CORRECTION RESULTS (GHANA) HDI

Vector Error Correction Estimates
Date: 10/22/19 Time: 15:22
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1	CointEq2
HDIG(-1)	1.000000	0.000000
TAXREVG(-1)	0.000000	1.000000
OREVG(-1)	6.25E-05	1.07E-05
	(0.00010)	(0.00040)
	[0.62457]	[0.02646]
CEXPG(-1)	-0.001763	-0.338345
	(0.01750)	(0.07048)
	[-0.10072]	[-4.80072]
REXPG(-1)	-0.004654	0.144042
	(0.00362)	(0.01459)
	[-1.28510]	[9.87503]
DEFG(-1)	0.000333	0.000151
	(0.00010)	(0.00040)
	[3.33282]	[0.37566]
C	0.233755	-12.97853

Error Correction:	D(HDIG)	D(TAXREVG)	D(OREVG)	D(CEXPG)	D(REXPG)	D(DEFG)
CointEq1	-0.060372	-1.542779	-128.3276	-3.873740	-10.29183	-1480.215
	(0.07739)	(1.24565)	(494.358)	(2.83580)	(3.30794)	(546.420)
	[-0.78013]	[-1.23854]	[-0.25958]	[-1.36601]	[-3.11125]	[-2.70893]
CointEq2	-0.016669	-0.346871	-26.74905	1.957931	-2.025828	58.28984
	(0.01729)	(0.27838)	(110.481)	(0.63376)	(0.73928)	(122.117)
	[-0.96383]	[-1.24602]	[-0.24211]	[3.08940]	[-2.74029]	[0.47733]
D(HDIG(-1))	-0.162277	-0.208875	-50.42447	5.413376	5.513223	1202.308
	(0.21791)	(3.50753)	(1392.03)	(7.98514)	(9.31461)	(1538.63)
	[-0.74470]	[-0.05955]	[-0.03622]	[0.67793]	[0.59189]	[0.78142]
D(TAXREVG(-1))	-0.001174	0.320594	99.62589	-1.291616	0.876393	62.25179
	(0.02110)	(0.33959)	(134.771)	(0.77309)	(0.90181)	(148.965)
	[-0.05563]	[0.94407]	[0.73922]	[-1.67071]	[0.97182]	[0.41790]
D(OREVG(-1))	1.77E-07	-2.44E-05	0.131228	-0.001074	0.001609	-0.810243
	(3.2E-05)	(0.00052)	(0.20657)	(0.00118)	(0.00138)	(0.22832)
	[0.00547]	[-0.04685]	[0.63527]	[-0.90622]	[1.16406]	[-3.54864]
D(CEXPG(-1))	-0.004020	-0.107634	-10.73248	-0.138639	-0.273976	-62.21720
	(0.00480)	(0.07725)	(30.6565)	(0.17586)	(0.20513)	(33.8851)

	[-0.83772]	[-1.39339]	[-0.35009]	[-0.78837]	[-1.33559]	[-1.83613]
D(REXPG(-1))	0.002391	-0.075345	11.39843	-0.180888	-0.209665	-27.47785
	(0.00476)	(0.07669)	(30.4365)	(0.17459)	(0.20366)	(33.6419)
	[0.50188]	[-0.98243]	[0.37450]	[-1.03605]	[-1.02947]	[-0.81677]
D(DEFG(-1))	2.34E-05	-3.09E-05	-0.189395	0.002083	0.001684	0.192708
	(2.8E-05)	(0.00045)	(0.17688)	(0.00101)	(0.00118)	(0.19551)
	[0.84486]	[-0.06922]	[-1.07073]	[2.05329]	[1.42313]	[0.98565]
C	0.031926	0.199995	50.82795	0.180762	-2.958583	-72.64472
	(0.02277)	(0.36658)	(145.482)	(0.83453)	(0.97348)	(160.803)
	[1.40186]	[0.54558]	[0.34938]	[0.21660]	[-3.03919]	[-0.45176]
R-squared	0.127821	0.178445	0.179595	0.575805	0.413073	0.569438
Adj. R-squared	-0.204437	-0.134528	-0.132941	0.414207	0.189482	0.405414
Sum sq. resids	0.178680	46.29434	7291545.	239.9324	326.4779	8908220.
S.E. equation	0.092242	1.484753	589.2507	3.380141	3.942914	651.3071
F-statistic	0.384705	0.570161	0.574638	3.563197	1.847448	3.471680
Log likelihood	34.28222	-49.07549	-228.5836	-73.75556	-78.37563	-231.5875
Akaike AIC	-1.685481	3.871699	15.83891	5.517037	5.825042	16.03916
Schwarz SC	-1.265122	4.292059	16.25926	5.937396	6.245401	16.45952
Mean dependent	0.019733	0.436667	81.25000	0.026667	-2.236667	-75.53333
S.D. dependent	0.084050	1.393948	553.6006	4.416344	4.379614	844.6534

Determinant resid covariance (dof adj.)	1.72E+11
Determinant resid covariance	2.02E+10
Log likelihood	-611.3292
Akaike information criterion	45.15528
Schwarz criterion	48.23792
Number of coefficients	66

Dependent Variable: D(HDIG)
Method: Least Squares (Gauss-Newton / Marquardt steps)
Date: 10/22/19 Time: 15:24
Sample (adjusted): 1988 2017
Included observations: 30 after adjustments
D(HDIG) = C(1)*(HDIG(-1) + 6.25012831984E-05*OREVG(-1) - 0.00176253126917*CEXPG(-1) - 0.0046542184735*REXPG(-1) + 0.000333056901465*DEFG(-1) + 0.233754958036) + C(2)*(TAXREVG(-1) + 1.06648845099E-05*OREVG(-1) - 0.338345012863 *CEXPG(-1) + 0.144042315916*REXPG(-1) + 0.000151195519461 *DEFG(-1) - 12.9785281273) + C(3)*D(HDIG(-1)) + C(4)*D(TAXREVG(-1)) + C(5)*D(OREVG(-1)) + C(6)*D(CEXPG(-1)) + C(7)*D(REXPG(-1)) + C(8)*D(DEFG(-1)) + C(9)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.060372	0.077387	-0.780134	0.4440
C(2)	-0.016669	0.017295	-0.963832	0.3461
C(3)	-0.162277	0.217909	-0.744702	0.4647
C(4)	-0.001174	0.021097	-0.055633	0.9562
C(5)	1.77E-07	3.23E-05	0.005469	0.9957
C(6)	-0.004020	0.004799	-0.837721	0.4116
C(7)	0.002391	0.004765	0.501882	0.6210
C(8)	2.34E-05	2.77E-05	0.844860	0.4077
C(9)	0.031926	0.022774	1.401863	0.1756
R-squared	0.127821	Mean dependent var		0.019733

Adjusted R-squared	-0.204437	S.D. dependent var	0.084050
S.E. of regression	0.092242	Akaike info criterion	-1.685481
Sum squared resid	0.178680	Schwarz criterion	-1.265122
Log likelihood	34.28222	Hannan-Quinn criter.	-1.551005
F-statistic	0.384705	Durbin-Watson stat	2.053027
Prob(F-statistic)	0.916766		

APPENDIX III(c)i: VECTOR ERROR CORRECTION RESULTS (SUB SAHARAN AFRICA)HDI

Vector Error Correction Estimates
Date: 02/06/20 Time: 19:56
Sample (adjusted): 1989 2017
Included observations: 29 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1	CointEq2	CointEq3			
HDI(-1)	1.000000	0.000000	0.000000			
TAXREVS(-1)	0.000000	1.000000	0.000000			
OREVS(-1)	0.000000	0.000000	1.000000			
CEXPS(-1)	0.000725	-0.585576	-1.727388			
	(0.00117)	(0.06251)	(0.43334)			
	[0.61933]	[-9.36782]	[-3.98624]			
REXPS(-1)	0.000547	-0.660853	-3.334362			
	(0.00047)	(0.02482)	(0.17208)			
	[1.17592]	[-26.6222]	[-19.3763]			
DEFS(-1)	-0.000145	-4.21E-05	-0.794962			
	(0.00028)	(0.01477)	(0.10240)			
	[-0.52481]	[-0.00285]	[-7.76305]			
C	-1.127581	110.9272	303.1235			
Error Correction:	**D(HDI)**	**D(TAXREVS)**	**D(OREVS)**	**D(CEXPS)**	**D(REXPS)**	**D(DEFS)**
CointEq1	-0.129095	81.84656	552.4408	-27.08633	162.9097	93.84876
	(0.08928)	(29.7268)	(388.116)	(62.6972)	(76.5620)	(279.441)
	[-1.44601]	[2.75329]	[1.42339]	[-0.43202]	[2.12782]	[0.33584]
CointEq2	0.000133	-2.457843	-4.354064	-0.453591	-0.916015	3.311419
	(0.00067)	(0.22206)	(2.89930)	(0.46836)	(0.57193)	(2.08748)
	[0.19926]	[-11.0682]	[-1.50177]	[-0.96847]	[-1.60162]	[1.58633]
CointEq3	2.27E-05	0.261929	-1.952526	0.138841	-0.116319	0.086413

	(0.00010)	(0.03371)	(0.44011)	(0.07110)	(0.08682)	(0.31687)
	[0.22458]	[7.77033]	[-4.43649]	[1.95287]	[-1.33981]	[0.27271]
D(HDI(-1))	-0.074931	62.89408	-712.1722	-17.60807	7.365217	-334.5473
	(0.25994)	(86.5543)	(1130.06)	(182.553)	(222.922)	(813.638)
	[-0.28826]	[0.72664]	[-0.63021]	[-0.09645]	[0.03304]	[-0.41117]
D(HDI(-2))	-0.129359	54.36508	-871.8351	63.31540	32.07551	-941.3562
	(0.25771)	(85.8116)	(1120.36)	(180.986)	(221.010)	(806.656)
	[-0.50195]	[0.63354]	[-0.77817]	[0.34984]	[0.14513]	[-1.16699]
D(TAXREVS(-1))	7.83E-06	0.909664	2.699244	0.326896	0.445572	-1.346819
	(0.00045)	(0.14852)	(1.93905)	(0.31324)	(0.38251)	(1.39610)
	[0.01755]	[6.12499]	[1.39205]	[1.04360]	[1.16487]	[-0.96470]
D(TAXREVS(-2))	0.000115	0.654537	0.067019	-0.081622	0.336062	-1.782723
	(0.00034)	(0.11274)	(1.47195)	(0.23778)	(0.29037)	(1.05980)
	[0.34035]	[5.80568]	[0.04553]	[-0.34326]	[1.15737]	[-1.68214]
D(OREVS(-1))	-6.45E-05	-0.281423	1.154214	-0.052107	-0.099162	0.059337
	(0.00010)	(0.03492)	(0.45587)	(0.07364)	(0.08993)	(0.32823)
	[-0.61474]	[-8.05988]	[2.53187]	[-0.70756]	[-1.10268]	[0.18078]
D(OREVS(-2))	4.96E-05	-0.129098	0.323478	-0.061961	0.014955	-0.269956
	(9.2E-05)	(0.03068)	(0.40051)	(0.06470)	(0.07901)	(0.28837)
	[0.53822]	[-4.20839]	[0.80766]	[-0.95767]	[0.18928]	[-0.93615]
D(CEXPS(-1))	-6.60E-05	-1.612088	-7.339273	-0.534682	-0.567605	0.724832
	(0.00055)	(0.18479)	(2.41262)	(0.38974)	(0.47593)	(1.73707)
	[-0.11893]	[-8.72394]	[-3.04203]	[-1.37189]	[-1.19263]	[0.41727]
D(CEXPS(-2))	-0.000264	-1.201527	-6.094513	0.535984	-0.364654	1.682181
	(0.00058)	(0.19153)	(2.50057)	(0.40395)	(0.49328)	(1.80040)
	[-0.45895]	[-6.27346]	[-2.43725]	[1.32686]	[-0.73925]	[0.93434]
D(REXPS(-1))	0.000643	-0.183777	-11.45156	0.284271	-0.817035	0.801666
	(0.00065)	(0.21648)	(2.82633)	(0.45657)	(0.55754)	(2.03494)
	[0.98903]	[-0.84895]	[-4.05175]	[0.62262]	[-1.46544]	[0.39395]
D(REXPS(-2))	0.000310	0.438854	-9.155456	0.199264	-0.157767	0.581856
	(0.00039)	(0.13065)	(1.70575)	(0.27555)	(0.33649)	(1.22813)
	[0.79012]	[3.35906]	[-5.36740]	[0.72315]	[-0.46887]	[0.47377]
D(DEFS(-1))	9.00E-05	0.200277	-1.902328	0.047787	0.188494	-0.646948
	(0.00015)	(0.04849)	(0.63303)	(0.10226)	(0.12487)	(0.45577)
	[0.61839]	[4.13069]	[-3.00514]	[0.46731]	[1.50947]	[-1.41945]
D(DEFS(-2))	-0.000118	0.170593	-2.192202	0.286023	0.260428	-0.448400
	(0.00018)	(0.05976)	(0.78018)	(0.12603)	(0.15390)	(0.56173)
	[-0.65954]	[2.85483]	[-2.80986]	[2.26944]	[1.69216]	[-0.79825]
C	-0.060525	67.75784	1413.583	-5.478399	222.9868	-125.4504
	(0.07895)	(26.2883)	(343.223)	(55.4450)	(67.7061)	(247.118)
	[-0.76662]	[2.57749]	[4.11856]	[-0.09881]	[3.29345]	[-0.50765]
R-squared	0.201060	0.959456	0.885950	0.656996	0.938907	0.747886
Adj. R-squared	-0.720795	0.912675	0.754353	0.261222	0.868415	0.456985
Sum sq. resids	0.121870	13511.78	2303242.	60105.26	89627.78	1193980.
S.E. equation	0.096822	32.23923	420.9186	67.99619	83.03279	303.0588
F-statistic	0.218103	20.50940	6.732317	1.660028	13.31930	2.570930
Log likelihood	38.19623	-130.2375	-204.7459	-151.8793	-157.6730	-195.2191

Akaike AIC	-1.530774	10.08535	15.22386	11.57788	11.97745	14.56683
Schwarz SC	-0.776404	10.83972	15.97823	12.33225	12.73182	15.32120
Mean dependent	0.018586	55.40741	112.5426	16.72345	121.6274	-101.9714
S.D. dependent	0.073809	109.0976	849.2635	79.10930	228.8999	411.2642

Determinant resid covariance (dof adj.)	5.60E+17
Determinant resid covariance	4.55E+15
Log likelihood	-769.6651
Akaike information criterion	60.94242
Schwarz criterion	66.31731
Number of coefficients	114

Dependent Variable: D(HDI)
Method: Least Squares (Gauss-Newton / Marquardt steps)
Date: 02/06/20 Time: 19:58
Sample (adjusted): 1989 2017
Included observations: 29 after adjustments
D(HDI) = C(1)*(HDI(-1) + 0.000725285908117*CEXPS(-1) +
0.00054687127199*REXPS(-1) - 0.000145238803165*DEFS(-1) -
1.12758091964) + C(2)*(TAXREVS(-1) - 0.58557609843*CEXPS(-1) -
0.660853409241*REXPS(-1) - 4.21329409126E-05*DEFS(-1) +
110.927191127) + C(3)*(OREVS(-1) - 1.72738769796*CEXPS(-1) -
3.33436242022*REXPS(-1) - 0.794962317417*DEFS(-1) +
303.123539078) + C(4)*D(HDI(-1)) + C(5)*D(HDI(-2)) + C(6)
*D(TAXREVS(-1)) + C(7)*D(TAXREVS(-2)) + C(8)*D(OREVS(-1)) + C(9)
*D(OREVS(-2)) + C(10)*D(CEXPS(-1)) + C(11)*D(CEXPS(-2)) + C(12)
*D(REXPS(-1)) + C(13)*D(REXPS(-2)) + C(14)*D(DEFS(-1)) + C(15)
*D(DEFS(-2)) + C(16)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.129095	0.089277	-1.446007	0.1719
C(2)	0.000133	0.000667	0.199260	0.8451
C(3)	2.27E-05	0.000101	0.224580	0.8258
C(4)	-0.074931	0.259944	-0.288257	0.7777
C(5)	-0.129359	0.257714	-0.501950	0.6241
C(6)	7.83E-06	0.000446	0.017552	0.9863
C(7)	0.000115	0.000339	0.340349	0.7390
C(8)	-6.45E-05	0.000105	-0.614736	0.5493
C(9)	4.96E-05	9.21E-05	0.538216	0.5995
C(10)	-6.60E-05	0.000555	-0.118933	0.9071
C(11)	-0.000264	0.000575	-0.458955	0.6538
C(12)	0.000643	0.000650	0.989029	0.3407
C(13)	0.000310	0.000392	0.790117	0.4436
C(14)	9.00E-05	0.000146	0.618392	0.5470
C(15)	-0.000118	0.000179	-0.659535	0.5211
C(16)	-0.060525	0.078950	-0.766621	0.4570

R-squared	0.201060	Mean dependent var	0.018586
Adjusted R-squared	-0.720795	S.D. dependent var	0.073809
S.E. of regression	0.096822	Akaike info criterion	-1.530774
Sum squared resid	0.121870	Schwarz criterion	-0.776404
Log likelihood	38.19623	Hannan-Quinn criter.	-1.294515
F-statistic	0.218103	Durbin-Watson stat	2.177374
Prob(F-statistic)	0.996838		

APPENDIX III(c)ii: VECTOR ERROR CORRECTION RESULTS (SUB SAHARAN AFRICA)GDP

Vector Error Correction Estimates
Date: 02/06/20 Time: 20:04
Sample (adjusted): 1989 2017
Included observations: 29 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1	CointEq2	CointEq3	CointEq4
GDPS_$(-1)	1.000000	0.000000	0.000000	0.000000
TAXREVS(-1)	0.000000	1.000000	0.000000	0.000000
OREVS(-1)	0.000000	0.000000	1.000000	0.000000
CEXPS(-1)	0.000000	0.000000	0.000000	1.000000
REXPS(-1)	-0.933124	-0.209419	-1.946196	0.839100
	(0.07073)	(0.06238)	(0.20246)	(0.15557)
	[-13.1928]	[-3.35734]	[-9.61253]	[5.39369]
DEFS(-1)	-0.070668	0.257124	0.094255	0.477672
	(0.03785)	(0.03338)	(0.10836)	(0.08326)
	[-1.86682]	[7.70206]	[0.86984]	[5.73703]
C	-194.9546	-95.72546	-218.2783	-363.5938

Error Correction:	D(GDPS_$)	D(TAXREVS)	D(OREVS)	D(CEXPS)	D(REXPS)	D(DEFS)
CointEq1	-0.311339	-0.290101	-1.197387	-0.098887	1.031503	-2.577332
	(0.20342)	(0.18440)	(2.24496)	(0.30166)	(0.32924)	(0.98306)
	[-1.53053]	[-1.57321]	[-0.53337]	[-0.32781]	[3.13299]	[-2.62174]
CointEq2	-0.470646	-2.692867	-5.273531	-0.380845	-0.041021	0.926559
	(0.29464)	(0.26710)	(3.25172)	(0.43694)	(0.47689)	(1.42392)
	[-1.59734]	[-10.0820]	[-1.62177]	[-0.87162]	[-0.08602]	[0.65071]
CointEq3	-0.103880	0.246074	-1.843172	0.089772	-0.117695	0.408923
	(0.03707)	(0.03360)	(0.40909)	(0.05497)	(0.06000)	(0.17914)
	[-2.80241]	[7.32309]	[-4.50556]	[1.63311]	[-1.96172]	[2.28272]
CointEq4	0.657628	0.772882	6.037975	-0.476089	0.614596	-0.305257
	(0.16763)	(0.15196)	(1.84998)	(0.24859)	(0.27131)	(0.81010)
	[3.92310]	[5.08616]	[3.26380]	[-1.91519]	[2.26526]	[-0.37681]
D(GDPS_$(-1))	0.593752	0.232634	5.161283	1.039274	-0.579592	0.346578
	(0.34036)	(0.30853)	(3.75620)	(0.50473)	(0.55087)	(1.64483)
	[1.74451]	[0.75400]	[1.37407]	[2.05908]	[-1.05213]	[0.21071]
D(GDPS_$(-2))	-0.652362	0.887738	-3.920419	1.653363	-0.524801	-4.084041
	(0.55770)	(0.50556)	(6.15482)	(0.82703)	(0.90265)	(2.69518)
	[-1.16974]	[1.75596]	[-0.63697]	[1.99915]	[-0.58140]	[-1.51531]
D(TAXREVS(-1))	0.146346	1.126765	3.573530	0.329816	-0.158441	0.400428
	(0.21259)	(0.19271)	(2.34614)	(0.31525)	(0.34408)	(1.02737)
	[0.68840]	[5.84688]	[1.52315]	[1.04619]	[-0.46048]	[0.38976]

D(TAXREVS(-2))	-0.035807	0.873040	1.132010	0.159847	-0.031376	-1.019545
	(0.16753)	(0.15187)	(1.84892)	(0.24844)	(0.27116)	(0.80963)
	[-0.21373]	[5.74860]	[0.61226]	[0.64340]	[-0.11571]	[-1.25927]
D(OREVS(-1))	0.036541	-0.307743	0.550451	-0.139037	-0.071111	-0.155348
	(0.04480)	(0.04061)	(0.49441)	(0.06644)	(0.07251)	(0.21650)
	[0.81565]	[-7.57779]	[1.11334]	[-2.09283]	[-0.98071]	[-0.71753]
D(OREVS(-2))	0.046264	-0.153137	0.601336	-0.069141	0.073865	-0.338006
	(0.04479)	(0.04061)	(0.49434)	(0.06643)	(0.07250)	(0.21647)
	[1.03283]	[-3.77136]	[1.21644]	[-1.04088]	[1.01885]	[-1.56144]
D(CEXPS(-1))	-0.048650	-1.736056	-4.873919	-0.745507	-0.783879	1.757426
	(0.26804)	(0.24298)	(2.95816)	(0.39749)	(0.43384)	(1.29537)
	[-0.18150]	[-7.14476]	[-1.64762]	[-1.87552]	[-1.80686]	[1.35670]
D(CEXPS(-2))	-0.411416	-1.224118	-6.952847	0.392888	-0.551611	1.457822
	(0.20055)	(0.18180)	(2.21330)	(0.29740)	(0.32460)	(0.96920)
	[-2.05143]	[-6.73331]	[-3.14140]	[1.32106]	[-1.69938]	[1.50415]
D(REXPS(-1))	-1.342693	-0.257409	-10.80093	1.012737	0.362372	-2.815786
	(0.35379)	(0.32072)	(3.90452)	(0.52466)	(0.57263)	(1.70978)
	[-3.79512]	[-0.80260]	[-2.76626]	[1.93028]	[0.63282]	[-1.64687]
D(REXPS(-2))	-0.553282	0.328563	-7.171375	0.521254	0.393603	-0.328934
	(0.23229)	(0.21057)	(2.56360)	(0.34447)	(0.37597)	(1.12259)
	[-2.38185]	[1.56032]	[-2.79739]	[1.51318]	[1.04690]	[-0.29301]
D(DEFS(-1))	-0.195548	0.265866	-0.872003	0.213923	0.038106	-0.463464
	(0.09251)	(0.08386)	(1.02090)	(0.13718)	(0.14972)	(0.44705)
	[-2.11391]	[3.17047]	[-0.85415]	[1.55943]	[0.25451]	[-1.03671]
D(DEFS(-2))	-0.177685	0.198161	-2.345612	0.420615	0.191638	-0.810663
	(0.06446)	(0.05843)	(0.71134)	(0.09558)	(0.10432)	(0.31149)
	[-2.75672]	[3.39148]	[-3.29748]	[4.40051]	[1.83698]	[-2.60252]
C	182.6935	23.56833	1159.438	-197.4842	149.7639	335.3581
	(57.0745)	(51.7385)	(629.882)	(84.6382)	(92.3767)	(275.824)
	[3.20096]	[0.45553]	[1.84072]	[-2.33328]	[1.62123]	[1.21584]
R-squared	0.934968	0.965179	0.914831	0.822774	0.974784	0.930358
Adj. R-squared	0.848259	0.918750	0.801272	0.586473	0.941162	0.837503
Sum sq. resids	14121.86	11604.73	1719988.	31055.61	36994.07	329814.6
S.E. equation	34.30484	31.09760	378.5926	50.87207	55.52332	165.7846
F-statistic	10.78282	20.78846	8.056003	3.481889	28.99257	10.01940
Log likelihood	-130.8779	-128.0314	-200.5119	-142.3047	-144.8419	-176.5646
Akaike AIC	10.19847	10.00216	15.00082	10.98653	11.16151	13.34928
Schwarz SC	10.99999	10.80368	15.80234	11.78805	11.96303	14.15080
Mean dependent	47.84410	55.40741	112.5426	16.72345	121.6274	-101.9714
S.D. dependent	88.06514	109.0976	849.2635	79.10930	228.8999	411.2642

Determinant resid covariance (dof adj.)	1.38E+20
Determinant resid covariance	6.91E+17
Log likelihood	-842.5199
Akaike information criterion	66.79448
Schwarz criterion	72.73514
Number of coefficients	126

Dependent Variable: D(GDPS_$)

Method: Least Squares (Gauss-Newton / Marquardt steps)
Date: 02/06/20 Time: 20:05
Sample (adjusted): 1989 2017
Included observations: 29 after adjustments
D(GDPS_$) = C(1)*(GDPS_$(-1) - 0.933124100172*REXPS(-1) - 0.0706676651994*DEFS(-1) - 194.954604874) + C(2)*(TAXREVS(-1) - 0.209418562965*REXPS(-1) + 0.257123748877*DEFS(-1) - 95.7254618227) + C(3)*(OREVS(-1) - 1.94619566737*REXPS(-1) + 0.0942551691972*DEFS(-1) - 218.278337375) + C(4)*(CEXPS(-1) + 0.839100056841*REXPS(-1) + 0.477671889185*DEFS(-1) - 363.593840352) + C(5)*D(GDPS_$(-1)) + C(6)*D(GDPS_$(-2)) + C(7) *D(TAXREVS(-1)) + C(8)*D(TAXREVS(-2)) + C(9)*D(OREVS(-1)) + C(10) *D(OREVS(-2)) + C(11)*D(CEXPS(-1)) + C(12)*D(CEXPS(-2)) + C(13) *D(REXPS(-1)) + C(14)*D(REXPS(-2)) + C(15)*D(DEFS(-1)) + C(16) *D(DEFS(-2)) + C(17)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.311339	0.203419	-1.530532	0.1518
C(2)	-0.470646	0.294643	-1.597344	0.1362
C(3)	-0.103880	0.037068	-2.802410	0.0160
C(4)	0.657628	0.167630	3.923095	0.0020
C(5)	0.593752	0.340355	1.744508	0.1066
C(6)	-0.652362	0.557698	-1.169741	0.2648
C(7)	0.146346	0.212587	0.688404	0.5043
C(8)	-0.035807	0.167533	-0.213730	0.8343
C(9)	0.036541	0.044800	0.815654	0.4306
C(10)	0.046264	0.044793	1.032833	0.3220
C(11)	-0.048650	0.268043	-0.181501	0.8590
C(12)	-0.411416	0.200550	-2.051434	0.0627
C(13)	-1.342693	0.353795	-3.795119	0.0026
C(14)	-0.553282	0.232291	-2.381845	0.0346
C(15)	-0.195548	0.092506	-2.113907	0.0561
C(16)	-0.177685	0.064455	-2.756722	0.0174
C(17)	182.6935	57.07453	3.200964	0.0076

R-squared	0.934968	Mean dependent var	47.84410
Adjusted R-squared	0.848259	S.D. dependent var	88.06514
S.E. of regression	34.30484	Akaike info criterion	10.19847
Sum squared resid	14121.86	Schwarz criterion	10.99999
Log likelihood	-130.8779	Hannan-Quinn criter.	10.44950
F-statistic	10.78282	Durbin-Watson stat	2.368571
Prob(F-statistic)	0.000087		

APPENDIX III(c)iii: VECTOR ERROR CORRECTION RESULTS (SUB SAHARAN AFRICA) UNPs

Vector Error Correction Estimates
Date: 02/06/20 Time: 20:08
Sample (adjusted): 1989 2017
Included observations: 29 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1	CointEq2	CointEq3
UNPS__(-1)	1.000000	0.000000	0.000000
TAXREVS(-1)	0.000000	1.000000	0.000000
OREVS(-1)	0.000000	0.000000	1.000000

CEXPS(-1)	-0.005291	-0.571189	-1.556076
	(0.00073)	(0.05274)	(0.40443)
	[-7.25038]	[-10.8294]	[-3.84753]
REXPS(-1)	0.001616	-0.585215	-3.548366
	(0.00044)	(0.03198)	(0.24521)
	[3.65130]	[-18.2999]	[-14.4706]
DEFS(-1)	4.73E-05	0.047687	-1.064043
	(0.00024)	(0.01725)	(0.13227)
	[0.19806]	[2.76440]	[-8.04429]
C	-13.49685	100.6025	150.5526

Error Correction:	D(UNPS__)	D(TAXREVS)	D(OREVS)	D(CEXPS)	D(REXPS)	D(DEFS)
CointEq1	-0.356509	42.49545	308.8439	-25.72808	-82.45367	476.6917
	(0.18045)	(19.2014)	(247.166)	(27.7826)	(39.9757)	(69.6175)
	[-1.97569]	[2.21315]	[1.24954]	[-0.92605]	[-2.06260]	[6.84730]
CointEq2	0.002417	-2.505395	-8.520206	0.334522	-0.439249	-2.288379
	(0.00309)	(0.32843)	(4.22768)	(0.47521)	(0.68377)	(1.19078)
	[0.78321]	[-7.62837]	[-2.01534]	[0.70395]	[-0.64240]	[-1.92175]
CointEq3	0.000182	0.139114	-1.245164	0.016724	-0.068444	0.490396
	(0.00027)	(0.02921)	(0.37603)	(0.04227)	(0.06082)	(0.10591)
	[0.66312]	[4.76222]	[-3.31137]	[0.39568]	[-1.12541]	[4.63019]
D(UNPS__(-1))	0.449688	-98.51388	6.101507	-122.3126	-14.83622	163.2958
	(0.23038)	(24.5148)	(315.563)	(35.4707)	(51.0379)	(88.8822)
	[1.95192]	[-4.01854]	[0.01934]	[-3.44827]	[-0.29069]	[1.83722]
D(UNPS__(-2))	0.490149	-73.44662	-80.26712	79.45047	-48.53906	-356.1882
	(0.43696)	(46.4962)	(598.515)	(67.2758)	(96.8013)	(168.579)
	[1.12174]	[-1.57963]	[-0.13411]	[1.18097]	[-0.50143]	[-2.11288]
D(TAXREVS(-1))	-0.001399	0.883487	6.645648	-0.167213	0.075260	2.859261
	(0.00197)	(0.20938)	(2.69518)	(0.30295)	(0.43591)	(0.75913)
	[-0.71107]	[4.21959]	[2.46575]	[-0.55195]	[0.17265]	[3.76650]
D(TAXREVS(-2))	0.000420	0.713585	3.380127	-0.368348	0.128690	1.327601
	(0.00157)	(0.16653)	(2.14365)	(0.24096)	(0.34671)	(0.60379)
	[0.26832]	[4.28497]	[1.57681]	[-1.52869]	[0.37118]	[2.19879]
D(OREVS(-1))	5.32E-05	-0.208396	0.072115	0.025018	-0.162866	-0.474054
	(0.00027)	(0.02904)	(0.37388)	(0.04203)	(0.06047)	(0.10531)
	[0.19496]	[-7.17496]	[0.19289]	[0.59531]	[-2.69337]	[-4.50164]
D(OREVS(-2))	-0.000365	-0.096837	0.325637	0.013025	0.075607	-0.594738
	(0.00031)	(0.03332)	(0.42896)	(0.04822)	(0.06938)	(0.12082)
	[-1.16635]	[-2.90588]	[0.75912]	[0.27013]	[1.08977]	[-4.92238]
D(CEXPS(-1))	0.002067	-1.670759	-8.114556	-0.233989	-1.076703	-0.113774
	(0.00260)	(0.27671)	(3.56186)	(0.40037)	(0.57608)	(1.00324)
	[0.79486]	[-6.03801]	[-2.27818]	[-0.58443]	[-1.86901]	[-0.11341]
D(CEXPS(-2))	0.001788	-1.307807	-8.775601	0.875132	-0.739907	-0.511094
	(0.00275)	(0.29311)	(3.77297)	(0.42410)	(0.61022)	(1.06270)
	[0.64903]	[-4.46188]	[-2.32591]	[2.06351]	[-1.21252]	[-0.48094]

D(REXPS(-1))	0.000121	-0.593140	-7.407342	0.283799	0.409102	-0.761417
	(0.00161)	(0.17112)	(2.20272)	(0.24760)	(0.35626)	(0.62042)
	[0.07498]	[-3.46621]	[-3.36282]	[1.14622]	[1.14833]	[-1.22725]
D(REXPS(-2))	0.001246	0.168649	-5.969883	0.095882	0.359752	0.849808
	(0.00091)	(0.09663)	(1.24381)	(0.13981)	(0.20117)	(0.35033)
	[1.37187]	[1.74537]	[-4.79969]	[0.68580]	[1.78831]	[2.42571]
D(DEFS(-1))	-0.000198	0.228392	-0.467604	-0.037754	0.295728	0.045114
	(0.00044)	(0.04693)	(0.60412)	(0.06791)	(0.09771)	(0.17016)
	[-0.44996]	[4.86646]	[-0.77402]	[-0.55597]	[3.02664]	[0.26513]
D(DEFS(-2))	0.001007	0.141804	-2.505111	0.171423	0.220826	-0.279301
	(0.00063)	(0.06756)	(0.86966)	(0.09775)	(0.14066)	(0.24495)
	[1.58643]	[2.09891]	[-2.88055]	[1.75361]	[1.56997]	[-1.14023]
C	-0.014021	112.1447	672.9857	4.651806	115.1540	-200.9420
	(0.15977)	(17.0014)	(218.848)	(24.5995)	(35.3956)	(61.6412)
	[-0.08776]	[6.59620]	[3.07513]	[0.18910]	[3.25334]	[-3.25986]
R-squared	0.733158	0.950697	0.865188	0.803697	0.951456	0.954393
Adj. R-squared	0.425264	0.893810	0.709635	0.577194	0.895444	0.901770
Sum sq. resids	1.451100	16430.75	2722527.	34398.52	71217.25	215988.1
S.E. equation	0.334100	35.55143	457.6299	51.43967	74.01520	128.8971
F-statistic	2.381202	16.71188	5.562030	3.548280	16.98654	18.13633
Log likelihood	2.277907	-133.0736	-207.1710	-143.7871	-154.3390	-170.4266
Akaike AIC	0.946351	10.28094	15.39110	11.01980	11.74752	12.85701
Schwarz SC	1.700721	11.03531	16.14547	11.77417	12.50189	13.61138
Mean dependent	-0.037019	55.40741	112.5426	16.72345	121.6274	-101.9714
S.D. dependent	0.440700	109.0976	849.2635	79.10930	228.8999	411.2642

Determinant resid covariance (dof adj.)	8.04E+16
Determinant resid covariance	6.52E+14
Log likelihood	-741.5118
Akaike information criterion	59.00082
Schwarz criterion	64.37570
Number of coefficients	114

Dependent Variable: D(UNPS__)
Method: Least Squares (Gauss-Newton / Marquardt steps)
Date: 02/06/20 Time: 20:09
Sample (adjusted): 1989 2017
Included observations: 29 after adjustments
D(UNPS__) = C(1)*(UNPS__(-1) - 0.00529100932201*CEXPS(-1) + 0.00161553889072*REXPS(-1) + 4.72701543527E-05*DEFS(-1) - 13.4968529864) + C(2)*(TAXREVS(-1) - 0.571189180211*CEXPS(-1) - 0.58521483624*REXPS(-1) + 0.0476867834754*DEFS(-1) + 100.602476851) + C(3)*(OREVS(-1) - 1.55607627554*CEXPS(-1) - 3.54836563859*REXPS(-1) - 1.06404259283*DEFS(-1) + 150.552552078) + C(4)*D(UNPS__(-1)) + C(5)*D(UNPS__(-2)) + C(6)*D(TAXREVS(-1)) + C(7)*D(TAXREVS(-2)) + C(8)*D(OREVS(-1)) + C(9)*D(OREVS(-2)) + C(10)*D(CEXPS(-1)) + C(11)*D(CEXPS(-2)) + C(12)*D(REXPS(-1)) + C(13)*D(REXPS(-2)) + C(14)*D(DEFS(-1)) + C(15)*D(DEFS(-2)) + C(16)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.356509	0.180448	-1.975689	0.0698
C(2)	0.002417	0.003086	0.783207	0.4475

C(3)	0.000182	0.000275	0.663124	0.5188
C(4)	0.449688	0.230382	1.951925	0.0728
C(5)	0.490149	0.436956	1.121735	0.2823
C(6)	-0.001399	0.001968	-0.711065	0.4896
C(7)	0.000420	0.001565	0.268321	0.7927
C(8)	5.32E-05	0.000273	0.194955	0.8484
C(9)	-0.000365	0.000313	-1.166352	0.2644
C(10)	0.002067	0.002600	0.794863	0.4410
C(11)	0.001788	0.002755	0.649032	0.5276
C(12)	0.000121	0.001608	0.074975	0.9414
C(13)	0.001246	0.000908	1.371871	0.1933
C(14)	-0.000198	0.000441	-0.449963	0.6601
C(15)	0.001007	0.000635	1.586433	0.1367
C(16)	-0.014021	0.159774	-0.087755	0.9314

R-squared	0.733158	Mean dependent var	-0.037019
Adjusted R-squared	0.425264	S.D. dependent var	0.440700
S.E. of regression	0.334100	Akaike info criterion	0.946351
Sum squared resid	1.451100	Schwarz criterion	1.700721
Log likelihood	2.277907	Hannan-Quinn criter.	1.182611
F-statistic	2.381202	Durbin-Watson stat	1.826315
Prob(F-statistic)	0.061927		

APPENDIX III(c)iv: VECTOR ERROR CORRECTION RESULTS (SUB SAHARAN AFRICA) POV

Vector Error Correction Estimates
Date: 02/06/20 Time: 20:13
Sample (adjusted): 1989 2017
Included observations: 29 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1	CointEq2	CointEq3
POVS__(-1)	1.000000	0.000000	0.000000
TAXREVS(-1)	0.000000	1.000000	0.000000
OREVS(-1)	0.000000	0.000000	1.000000
CEXPS(-1)	-0.009440	-0.536056	-1.528848
	(0.01391)	(0.07000)	(0.44286)
	[-0.67871]	[-7.65775]	[-3.45225]
REXPS(-1)	0.021274	-0.659941	-3.298125
	(0.00473)	(0.02379)	(0.15050)
	[4.50111]	[-27.7416]	[-21.9150]
DEFS(-1)	0.010620	-0.004806	-0.776032
	(0.00282)	(0.01419)	(0.08980)
	[3.76578]	[-0.33857]	[-8.64163]
C	-53.22036	93.91972	249.1298

Error Correction:	D(POVS__)	D(TAXREVS)	D(OREVS)	D(CEXPS)	D(REXPS)	D(DEFS)
CointEq1	-0.696828	0.121372	3.879951	3.744330	-5.259424	7.723836
	(0.12574)	(2.03355)	(24.9820)	(3.54370)	(5.27538)	(17.0286)
	[-5.54162]	[0.05968]	[0.15531]	[1.05662]	[-0.99698]	[0.45358]

CointEq2	0.002865	-2.464770	-4.316552	-0.656018	-0.808014	2.979381
	(0.01664)	(0.26918)	(3.30682)	(0.46907)	(0.69829)	(2.25404)
	[0.17215]	[-9.15667]	[-1.30535]	[-1.39854]	[-1.15713]	[1.32180]
CointEq3	-4.73E-05	0.237794	-1.736349	0.157528	-0.068221	0.171969
	(0.00226)	(0.03662)	(0.44991)	(0.06382)	(0.09501)	(0.30668)
	[-0.02088]	[6.49295]	[-3.85929]	[2.46830]	[-0.71807]	[0.56075]
D(POVS__(-1))	-0.091242	1.601058	-38.83293	2.539731	-4.479910	-8.977453
	(0.13726)	(2.21976)	(27.2695)	(3.86818)	(5.75842)	(18.5878)
	[-0.66474]	[0.72128]	[-1.42404]	[0.65657]	[-0.77797]	[-0.48298]
D(POVS__(-2))	-0.113016	0.510330	-11.02977	-2.224991	-0.176753	-16.46553
	(0.13911)	(2.24968)	(27.6371)	(3.92033)	(5.83606)	(18.8384)
	[-0.81243]	[0.22685]	[-0.39909]	[-0.56755]	[-0.03029]	[-0.87404]
D(TAXREVS(-1))	-0.003148	0.893302	3.203308	0.462342	0.463834	-1.127629
	(0.01120)	(0.18120)	(2.22608)	(0.31577)	(0.47008)	(1.51737)
	[-0.28091]	[4.92979]	[1.43899]	[1.46417]	[0.98672]	[-0.74314]
D(TAXREVS(-2))	-0.004840	0.621462	0.986555	0.001920	0.447593	-1.585340
	(0.00807)	(0.13050)	(1.60315)	(0.22741)	(0.33853)	(1.09276)
	[-0.59979]	[4.76225]	[0.61539]	[0.00844]	[1.32216]	[-1.45077]
D(OREVS(-1))	0.002412	-0.246544	0.684824	-0.067563	-0.196624	-0.023029
	(0.00202)	(0.03266)	(0.40122)	(0.05691)	(0.08472)	(0.27349)
	[1.19450]	[-7.54888]	[1.70685]	[-1.18713]	[-2.32074]	[-0.08421]
D(OREVS(-2))	-0.003182	-0.145732	0.607477	-0.108476	0.101925	-0.361002
	(0.00232)	(0.03747)	(0.46036)	(0.06530)	(0.09721)	(0.31380)
	[-1.37324]	[-3.88893]	[1.31957]	[-1.66114]	[1.04847]	[-1.15043]
D(CEXPS(-1))	-3.12E-05	-1.589250	-7.173232	-0.728233	-0.461053	0.273009
	(0.01361)	(0.22018)	(2.70492)	(0.38369)	(0.57119)	(1.84376)
	[-0.00229]	[-7.21788]	[-2.65192]	[-1.89796]	[-0.80718]	[0.14807]
D(CEXPS(-2))	0.006925	-1.152262	-7.045413	0.332706	-0.442518	1.223845
	(0.01405)	(0.22717)	(2.79082)	(0.39588)	(0.58933)	(1.90232)
	[0.49301]	[-5.07214]	[-2.52450]	[0.84042]	[-0.75088]	[0.64334]
D(REXPS(-1))	-0.006614	-0.528189	-7.420285	-0.058563	0.371809	0.604661
	(0.01094)	(0.17692)	(2.17344)	(0.30830)	(0.45896)	(1.48149)
	[-0.60456]	[-2.98548]	[-3.41407]	[-0.18995]	[0.81011]	[0.40814]
D(REXPS(-2))	0.001459	0.271315	-7.201786	0.167243	0.346521	0.829017
	(0.00654)	(0.10583)	(1.30009)	(0.18442)	(0.27454)	(0.88618)
	[0.22290]	[2.56374]	[-5.53946]	[0.90687]	[1.26220]	[0.93549]
D(DEFS(-1))	-0.002716	0.134069	-1.106448	-0.020802	0.425996	-0.714678
	(0.00266)	(0.04307)	(0.52913)	(0.07506)	(0.11173)	(0.36067)
	[-1.01971]	[3.11271]	[-2.09108]	[-0.27715]	[3.81257]	[-1.98152]
D(DEFS(-2))	0.011433	0.190484	-2.851606	0.330490	0.128579	-0.351096
	(0.00433)	(0.06998)	(0.85975)	(0.12196)	(0.18155)	(0.58604)
	[2.64197]	[2.72180]	[-3.31678]	[2.70991]	[0.70822]	[-0.59910]
C	1.494580	108.9352	862.2098	27.31746	83.55690	-132.7650
	(1.05862)	(17.1200)	(210.318)	(29.8337)	(44.4123)	(143.360)
	[1.41182]	[6.36302]	[4.09955]	[0.91566]	[1.88139]	[-0.92610]
R-squared	0.806561	0.948306	0.871255	0.701447	0.920972	0.744920

Adj. R-squared	0.583363	0.888658	0.722703	0.356963	0.829787	0.450596
Sum sq. resids	65.87161	17227.86	2600004.	52315.99	115938.6	1208028.
S.E. equation	2.251010	36.40357	447.2140	63.43742	94.43702	304.8364
F-statistic	3.613654	15.89855	5.864975	2.036224	10.09997	2.530955
Log likelihood	-53.04519	-133.7605	-206.5033	-149.8668	-161.4053	-195.3887
Akaike AIC	4.761737	10.32831	15.34505	11.43909	12.23485	14.57853
Schwarz SC	5.516107	11.08268	16.09942	12.19346	12.98922	15.33290
Mean dependent	0.032414	55.40741	112.5426	16.72345	121.6274	-101.9714
S.D. dependent	3.487375	109.0976	849.2635	79.10930	228.8999	411.2642

Determinant resid covariance (dof adj.)	3.17E+20
Determinant resid covariance	2.57E+18
Log likelihood	-861.5713
Akaike information criterion	67.28078
Schwarz criterion	72.65567
Number of coefficients	114

Dependent Variable: D(POVS__)
Method: Least Squares (Gauss-Newton / Marquardt steps)
Date: 02/06/20 Time: 20:14
Sample (adjusted): 1989 2017
Included observations: 29 after adjustments
D(POVS__) = C(1)*(POVS__(-1) - 0.00943951343459*CEXPS(-1) + 0.0212740403558*REXPS(-1) + 0.0106204617299*DEFS(-1) - 53.2203576391) + C(2)*(TAXREVS(-1) - 0.536055567724*CEXPS(-1) - 0.659941333579*REXPS(-1) - 0.00480596659242*DEFS(-1) + 93.919719262) + C(3)*(OREVS(-1) - 1.52884822157*CEXPS(-1) - 3.29812533864*REXPS(-1) - 0.776031647364*DEFS(-1) + 249.129807175) + C(4)*D(POVS__(-1)) + C(5)*D(POVS__(-2)) + C(6) *D(TAXREVS(-1)) + C(7)*D(TAXREVS(-2)) + C(8)*D(OREVS(-1)) + C(9) *D(OREVS(-2)) + C(10)*D(CEXPS(-1)) + C(11)*D(CEXPS(-2)) + C(12) *D(REXPS(-1)) + C(13)*D(REXPS(-2)) + C(14)*D(DEFS(-1)) + C(15) *D(DEFS(-2)) + C(16)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.696828	0.125744	-5.541623	0.0001
C(2)	0.002865	0.016645	0.172149	0.8660
C(3)	-4.73E-05	0.002265	-0.020881	0.9837
C(4)	-0.091242	0.137258	-0.664744	0.5178
C(5)	-0.113016	0.139109	-0.812426	0.4312
C(6)	-0.003148	0.011205	-0.280915	0.7832
C(7)	-0.004840	0.008069	-0.599788	0.5590
C(8)	0.002412	0.002020	1.194504	0.2536
C(9)	-0.003182	0.002317	-1.373241	0.1929
C(10)	-3.12E-05	0.013615	-0.002292	0.9982
C(11)	0.006925	0.014047	0.493011	0.6302
C(12)	-0.006614	0.010940	-0.604558	0.5559
C(13)	0.001459	0.006544	0.222896	0.8271
C(14)	-0.002716	0.002663	-1.019706	0.3265
C(15)	0.011433	0.004327	2.641971	0.0203
C(16)	1.494580	1.058616	1.411825	0.1815

R-squared	0.806561	Mean dependent var	0.032414
Adjusted R-squared	0.583363	S.D. dependent var	3.487375
S.E. of regression	2.251010	Akaike info criterion	4.761737
Sum squared resid	65.87161	Schwarz criterion	5.516107
Log likelihood	-53.04519	Hannan-Quinn criter.	4.997996
F-statistic	3.613654	Durbin-Watson stat	2.724104

Prob(F-statistic)	0.012605

APPENDIX IV (A) LOG VALUES OF DEPENDENT AND INDEPENDENT VARIABLES FOR GHANA

YEAR	logTARE	logOREV	log CEXP	log REXP	log DEFg	logPOVg	logUNPg	logHDIg	longINFg	logGDPg
1986	1.0128	0	1.233	1.91855	2.3502	1.602	0.8451	0	1.39094	0.75815
1987	0.9638	0	1.3404	1.89265	2.1139	1.601	0.7924	0	1.59879	0.70501
1988	0.9445	0	1.3784	1.88138	2.1732	1.599	0.7404	0	1.49693	0.716
1989	0.9395	0	1.3522	1.8893	2.0453	1.598	0.7243	0	1.4014	0.77012
1990	0.8808	0	1.3404	1.89265	2.4871	1.607	0.7482	-0.342	1.57054	0.81954
1991	0.8921	0	1.3502	1.88986	2.4346	1.676	0.6665	-0.3516	1.25768	0.80686
1992	0.7853	0	1.3345	1.89432	2.9036	1.667	0.6721	-0.3325	1.00432	0.77597
1993	0.9445	0	1.233	1.91855	2.8954	1.65	0.7226	-0.3143	1.39794	0.7356
1994	1.0492	0	1.2742	1.90956	2.8261	1.633	0.7672	-0.3615	1.3962	0.8109
1995	1.0531	0	1.4116	1.8704	2.8506	1.623	0.8109	-0.3757	1.77452	0.84073
1996	1.0569	0	1.433	1.86273	2.9713	1.624	0.85	-0.3439	1.66839	0.83822
1997	0.9777	0	1.2923	1.8488	3.0191	1.559	0.8808	-0.3655	1.4456	0.8739
1998	0.9956	0	1.3284	1.83187	2.9903	1.54	0.9138	-0.3134	1.16435	0.88762
1999	0.9542	0	1.3483	1.82478	3.033	1.511	1.0043	-0.308	1.09342	0.69723
2000	1.0414	0	1.2405	1.73878	2.692	1.486	1.0154	-0.2874	1.4014	0.72509
2001	1.0899	0	1.1673	1.75511	2.6794	1.46	0.968	-0.2857	1.5172	0.78958
2002	1.0569	0	1.0719	1.61066	2.6191	1.43	0.9335	-0.2857	1.17026	0.88252
2003	1.1367	0	1.2718	1.54283	2.574	1.425	0.8791	-0.2874	1.42651	0.94841
2004	1.1206	0	1.0334	1.39094	2.6444	1.417	0.8109	-0.2874	1.10037	1.0306
2005	1.1461	0	1.0719	1.30963	2.6937	1.401	0.7435	-0.2933	1.17898	0.99432
2006	1.1461	0	0.9912	1.25285	2.9827	1.401	0.6665	-0.2848	1.03743	1.30984
2007	1.1335	0	0.9395	1.14301	3.2531	1.412	0.6599	-0.2757	1.02938	1.39375
2008	1.1206	0	0.959	1.17026	3.3581	1.471	0.6684	-0.266	1.21748	1.4553
2009	1.0969	0	0.8513	1.12385	3.266	1.474	0.7135	-0.262	1.28556	1.45545
2010	1.1399	0	0.7993	1.20683	3.5097	1.449	0.7259	-0.2565	1.02938	1.50745
2011	1.1732	3.4661	0.8129	1.17898	3.4697	1.428	0.7716	-0.2495	0.93952	1.59737
2012	1.1931	3.5185	0.8633	1.19312	3.675	1.4	0.7789	-0.2441	0.85126	1.62263
2013	1.2148	3.5185	0.8451	1.20683	3.7588	1.435	0.8082	-0.2388	1.06819	1.80127
2014	1.2227	3.5185	0.8388	1.2014	3.6274	1.464	0.8116	-0.2396	1.19033	1.72567
2015	1.2355	3.5185	1.3579	1.15534	3.2969	1.471	0.8331	-0.2328	1.23553	1.68664
2016	1.2455	3.4433	1.3118	1.13988	3.5784	1.34	0.8306	-0.2306	1.24304	1.74028
2017	1.3483	3.3869	1.356	1.04139	3.3795	1.33	0.8215	-0.2277	1.09342	1.7707

APPENDIX IV (B)LOGARITHM VALUES OF DEPENDENT AND INDEPENDENT VARIABLES FOR NIGERIA

YEAR	logTAXRV	logOREVn	log CEXPn	log REXPn	log DEFn	logPOVn	logUNPn	logHDIn	longINFn	logGDPn
1986	0.65225	0.90902	0.93095	0.886491	0.91645	0.724	1.6375	0	0.75587	2.20629633
1987	0.80277	1.27944	0.80414	1.194514	0.77012	0.845	1.6474	0	1.0508	2.3969661
1988	0.89042	1.29732	0.92117	1.288026	1.08493	0.708	1.6263	0	1.7364	2.50559761
1989	1.1685	1.59251	1.17696	1.414806	1.17984	0.653	1.6493	0	1.70329	2.62242127
1990	1.41863	1.85667	1.38112	1.558948	1.34479	0.544	1.6712	0	0.86923	2.69869197
1991	1.26316	1.91735	1.4524	1.582518	1.5534	0.491	1.6503	0	1.11394	2.77527541
1992	1.42127	2.21506	1.59945	1.724522	1.59693	0.544	1.7566	0	1.64933	2.95894593
1993	1.48671	2.20978	1.7364	2.135864	1.81398	0.531	1.7528	0	1.7574	3.10004988
1994	1.62034	2.20464	1.85077	1.954098	1.84677	0.505	1.7348	0	1.75587	3.24620551
1995	2.13175	2.51128	2.08329	2.105953	0.30103	0.279	1.8169	0	1.86213	3.46167857
1996	2.05998	2.61149	2.32824	2.094261	0.30103	0.447	1.8028	0	1.46687	3.57739183
1997	2.22011	2.61994	2.4308	2.200194	0.69897	0.531	1.7443	0	0.92942	3.61401508
1998	2.14395	2.51096	2.48999	2.250664	2.12512	0.544	1.7251	0	1	3.66171711
1999	2.35174	2.85999	2.69726	2.652884	2.455	1.243	1.7042	-0.341	0.81954	3.72487855

2000	2.49759	3.20186	2.37921	2.664266	2.01611	1.117	1.6085	-0.3575	0.83885	3.83869045
2001	2.95591	3.23238	2.64217	2.762904	2.34449	1.134	1.5391	-0.342	1.27646	3.91031164
2002	2.69983	3.09021	2.50702	2.843108	2.47914	1.1	1.7042	-0.3316	1.11059	4.05431615
2003	2.69968	3.31687	2.38326	2.993127	2.3069	1.17	1.7284	-0.3536	1.14613	4.12390258
2004	2.75259	3.52567	2.54568	3.013974	2.23704	1.127	1.7356	-0.3354	1.17609	4.23858048
2005	2.89492	3.67783	2.71559	3.087675	2.2079	1.076	1.7275	-0.3325	1.25285	4.34771983
2006	2.83093	3.72326	2.74225	3.110657	2.00604	1.09	1.7284	-0.3233	0.91381	4.45731361
2007	3.10195	3.64962	2.88042	3.201198	2.06908	1.104	1.7292	-0.3197	0.73239	4.51845313
2008	3.12581	3.81495	2.98267	3.325795	1.6756	1.173	1.7332	-0.3143	1.06446	4.59281917
2009	3.21818	3.50405	3.06175	3.327966	2.90849	1.294	1.7284	-0.3098	1.09691	4.64626214
2010	3.28048	3.73208	2.94639	3.492674	3.04352	0.708	1.734	-0.3152	1.13672	4.73729015
2011	3.34984	3.94836	2.9631	3.520419	3.0639	0.778	1.6493	-0.3063	1.03342	4.79920541
2012	3.41975	3.9045	2.94192	3.521813	2.98935	1.025	1.6385	-0.2907	1.08636	4.85560358
2013	3.4699	3.8331	3.04469	3.566916	3.6201	1	1.6474	-0.2848	0.92942	4.90359218
2014	3.51522	3.83211	2.89383	3.534901	2.92204	0.892	1.6243	-0.2807	0.90309	4.94960281
2015	3.48889	3.58321	2.91295	3.58342	3.19251	0.954	1.6274	-0.2782	0.95472	4.97379708
2016	3.47496	3.43038	2.80264	3.760626	3.34404	1.127	1.6693	-0.2757	1.1959	5.00642107
2017	3.50622	3.61382	2.991	3.853631	3.853631	1.243	1.6875	-0.2741	1.21748	5.055804488

APPENDIX IV (C) LOG VALUES OF DEPENDENT AND INDEPENDENT VARIABLES FOR SUB SAHARAN AFRICA

YEAR	logTAREs	logOREVs	log CEXPs	log REXPs	log DEFs	logGDPs	logHDI	logPOVs %	logUNPs %
1986	0.868938	0.607991	1.107719	1.656098	2.064926	2.41088	0	1.540329	1.156973
1987	0.8907	0.978409	1.150296	1.670941	1.832158	2.469287	0	1.547775	1.156973
1988	0.918293	0.996293	1.207365	1.679019	1.906227	2.482189	0	1.602711	1.156973
1989	1.068928	1.29148	1.273349	1.713868	1.799788	2.479675	0	1.686279	1.143046
1990	1.228144	1.555638	1.361256	1.757092	2.216324	2.528689	-0.39577	1.737987	1.143046
1991	1.226109	1.616318	1.40432	1.762829	2.187182	2.53508	-0.39362	1.754195	1.130442
1992	1.210586	1.914026	1.486855	1.817665	2.623523	2.52905	-0.39362	1.690728	1.130496
1993	1.295237	1.908753	1.553883	2.040662	2.628981	2.498856	-0.39147	1.775246	1.145562
1994	1.42259	1.903605	1.651859	1.932398	2.56836	2.492386	-0.39041	1.745621	1.149556
1995	1.865519	2.210252	1.86611	2.003956	2.549616	2.55183	-0.38616	1.758155	1.151458
1996	1.800064	2.31046	2.079236	1.993745	2.670246	2.565989	-0.38195	1.7770115	1.152505
1997	1.943247	2.318908	2.160243	2.059109	2.720159	2.582942	-0.37882	1.767156	1.157508
1998	1.872739	2.20993	2.217905	2.089905	2.744836	2.567459	-0.37469	1.766413	1.153332
1999	2.067759	2.55896	2.415249	2.412007	2.833816	2.57114	-0.37161	1.765669	1.163996
2000	2.211494	2.900826	2.10865	2.411956	2.474056	2.598731	-0.37366	1.754348	1.164176
2001	2.660752	2.931346	2.355452	2.502564	2.543478	2.578091	-0.37059	1.736397	1.168031
2002	2.408571	2.789175	2.221649	2.566791	2.554731	2.615584	-0.36251	1.742725	1.179953
2003	2.410372	3.015837	2.114594	2.707229	2.460687	2.713804	-0.35262	1.725013	1.181402
2004	2.416574	3.224637	2.257799	2.723168	2.486855	2.809451	-0.34582	1.710456	1.163455
2005	2.601571	3.376796	2.42431	2.793825	2.515476	2.883765	-0.33819	1.705864	1.149865
2006	2.538787	3.422226	2.448853	2.815611	2.725258	2.958881	-0.32883	1.690373	1.127132
2007	2.805569	3.348588	2.584343	2.90395	2.979603	3.024075	-0.32148	1.67431	1.101987
2008	2.829046	3.513923	2.685737	3.02779	3.066024	3.083503	-0.31336	1.681241	1.072384
2009	2.920423	3.203019	2.763391	3.029641	3.265996	3.061075	-0.30627	1.662758	1.095665
2010	2.982583	3.431049	2.648443	3.193887	3.3364	3.137037	-0.30277	1.667453	1.105045
2011	3.051689	3.770998	2.665135	3.221363	3.31255	3.191171	-0.29671	1.654177	1.09446
2012	3.121294	3.753045	2.644503	3.222815	3.455437	3.215109	-0.29073	1.642465	1.087976
2013	3.171282	3.703688	2.746397	3.267777	3.537284	3.242541	-0.28316	1.62941	1.079253
2014	3.216394	3.703026	2.596608	3.235882	3.404464	3.262688	-0.27819	1.631444	1.084267
2015	3.190277	3.552066	2.623854	3.284008	3.247826	3.221153	-0.27491	1.617	1.107666
2016	3.176486	3.436871	2.51541	3.460635	3.476848	3.192289	-0.27165	1.614897	1.137063
2017	3.208199	3.515032	2.699924	355327	3.482552	3.228144	-0.26841	1.612784	1.123212