EFFECT OF GOVERNMENT SECTORAL EXPENDITURE ON THE GROWTH OF THE NIGERIAN ECONOMY (1980-2013)

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TITLE PAGE

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BEING A PhD DISSERTATION PRESENTED TO THE DEPARTMENT OF BANKING AN FINANCE FACULTY OF MANAGEMENT SCIENCES NNAMDI AZIKIWE UNIVERSITY, AWKA

IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE AWARD OF DOCTOR OF PHILOSOPHY (PhD) DEGREE IN BANKING AND FINANCE

JUNE, 2016

DECLARATION

I hereby declare that this dissertation has been written by me and it is a report of my research work. To the best of my knowledge, it has not been presented in any previous application for Diploma or Degree of Nnamdi Azikiwe University or any other Educational Institution. All quotations are indicated, all sources of information are specifically acknowledged by means of references.

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APPROVAL

We the undersigned certify that we have carefully examined this research work and found it adequate in scope and quality in partial fulfilment of the requirements for the award of Doctorate Degree (PhD) in Banking and Finance.

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DEDICATION

This research work is dedicated to Almighty God “Jehovah” and his beloved son Jesus Christ my redeemer.

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Abstract

The focus of this study is to empirically investigate the impact of government sectoral expenditure on the level of economic growth in Nigeria. It examined the level of government expenditure on some selected sectors and its effect on the level of economic growth in Nigeria. The sectors and subsectors examined include the solid minerals, the oil refineries, health, electricity and the education sectors. The study covered the period between 1980 and 2013. This period is significant because it covered the period of major development plans or economic policies on government expenditure, such as the Pre-Structural Adjustment Programme (Pre - SAP), SAP and Post SAP periods which include the National Economic Empowerment and Development Strategies (NEEDS) era. This period witnessed major reforms in government expenditure plan and a major transformation and increase as well as diversity in government expenditure. The study collected and made use of secondary data based on the World Bank Development Indicators for Nigeria for the period under review. The Cointegration and its implied Error Correction Model (ECM) was used for the analysis. This include the estimation of overparameterized and parsimonious ECM models. The result of the parsimonious model was used to test the hypotheses. The result shows that government expenditure on Solid Mineral, Oil Refineries, Health, Electricity and Education had a significant and positive effect on the level of economic growth in Nigeria for the period under review. This is an indication that these sectors and subsectors, if well funded and properly managed, have the potentials to increase the level of economic growth in Nigeria. On the basis of the above findings, the study thus recommends amongst others increased government budgetary allocation to the Solid Mineral, Oil Refineries, Health, Electricity and Education including other key sectors and subsectors of the economy and that how these expenditures are managed should be properly monitored.

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CHAPTER ONE
INTRODUCTION

1.1 Background of the Study

The role of government expenditure on economic growth has been an issue of much concern to several authors. According to Bhatia (2003), in developed countries, governments use expenditure as a tool for economic stabilization and stimulation of investment activities. While in developing countries, government expenditure plays active role in reducing regional disparities, developing social overheads, creating infrastructure of economic growth in the form of transport and communication facilities, education and training, growth of capital goods industries, basic and key industries, research and development and so on, (Bhatia, 2003; Charles,2006). Government expenditure has a great role to play in form of stimulation of savings and capital accumulation. (Bhatia, 2003).

In the view of Ebiringa and Anyaogu (2012) judicious management of government expenditure on health and education has a great potential to raise productivity of labour and increase the growth of national output. Similarly, Fasoranti (2012) argued that government expenditure on infrastructure such as roads, communication, electricity etc, reduces production costs, increases private sector investments and profitability of firms. Proponents of government expenditure often point to the fiscal multiplier as a way through which expenditure can fuel economic growth (Okoro, 2013). The multiplier is a factor by which the measure of outputs of an economy (i.e. the GDP) increases in response to a given amount of government expenditure (Charles, 2006). An initial burst of government expenditure trickles through the economy and is re-spent over and over again thereby growing the economy (Keynes, 1936).

Nigeria has earned so much from oil production over the decades (Akoji, Olubukola & Abba, 2013). With its large reserves of human and natural resources, Nigeria has the potential to build a prosperous economy, reduce poverty significantly, and provide health, education, and other infrastructural facilities to meet the needs of its vast population adequately (Okezie, Nwosu & Njoku, 2013). However, available evidence indicates that these resources have not been equitably used for the welfare of the populace (Aigbeyisi, 2013). Hence, associated with Nigeria development is huge inequalities. These inequalities have widened, as in many African countries with the economic crisis of the 1980s. The richest are more enriched, while the proportion of people living below the poverty line has increased with the disappearance of the middle class who could mediate between the two extremes (Usman & Nurudeen,2010; Fasoranti,2012; Aigbeyisi,2013; Abayomi & Agbatogun,2013). Moreover, the industrial base is not sufficiently developed to enable the country to have significant tax revenues. So a shift in the allocation of public spending for the poor to reduce the welfare gap that separates the rich from the poor becomes imperative (Aigbeyisi, 2013).

Over the last three decades both government recurrent and capital expenditure on the various sectors and key subsectors of the Nigerian economy have been expanding rapidly (Okoro, 2013). Total government recurrent and capital expenditure increased from ₦4,805.20 billion and ₦10,163,40 billion 1980 to ₦36,219.60 billion and ₦24,048.60 billion in 1990. This period covered a major part of Pre-structural Adjustment Programme (Pre-SAP) and the Structural Adjustment Programme (SAP) eras (Ayo,1988; Okigbo, 1989). This period witnessed the fourth and the fifth national development plans. The main strategy adopted was to use resources generated from sales of crude oil to ensure all-round expansion in production capacity of the economy and to lay a foundation for sustainable economic growth (Egonmwan and Ibodje, 2001).

Obviously, the fourth and the fifth national development plans were designed to diversify the economy and correct the structural defects in order to create a more self-reliant economy that would largely be sustained by domestic production of raw materials for the local industries so as to reduce the importation of manufactured goods and raw materials, and in the process reduce the level of unemployment and underemployment (Ayo, 1988; and Obi, 2006). However, this period witnessed phenomenal increase in the level of unemployment among school leavers in the economy. The growth rate of the gross domestic product (GDP) per annum was only 1.25% compared to 5.5%, 13.2% and 4.6% respectively, under the previous three national development plans, (Alapiki, 2009; and Onah, 2006).

Total government recurrent and capital expenditure rose from ₦36,219.60 billion and ₦24,048.60 billion in 1990 to N461,600.00 billion and ₦239,450.90 billion respectively in year 2000. This period witnessed the Perspective Plan, the Rolling Plans, and the Vision 2010. The federal government led by General Babangida introduced the Perspective Plan and Rolling Plans in 1990. The Perspective Plan was a fifteen to twenty years long term plan, designed to provide opportunity for a realistic long term view of the problem of the country. While the Rolling Plans were three years medium term plans which were subject to review

every year to ascertain whether the economy was progressing or not (Egonmwan & Iboje, 2001). Vision 2010 on the other hand, was introduced by the federal government led by General Sani Abacha. Vision 2010 incorporated the Perspective Plan, the Rolling Plans and the Short Term Plans which were in the form of annual budgets, (Jaja, 2000). During this era, the Nigerian economy did not record a significant growth in real terms as the level of unemployment, inflation rate etc remained unabated (Egonmwan & Iboje, 2001).

Government total recurrent and capital expenditure increased from ₦461, 600.00 billion and ₦239,450.90 billion in year 2000 to ₦1,589, 270.00 billion and ₦759, 323.00 billion in 2007 respectively. This period witnessed the launching of the National Economic Empowerment and Development Strategies (NEEDS) and the Vision 20:2020 by the federal government under President Olusegun Obasanjo. The basic focuses of NEEDS were wealth creation, employment generation, poverty reduction and value re-orientation (Ikeanyibe, 2009). Vision 20:2020 on the other hand was determined to make Nigeria one of the first twenty (20) most developed economies in the world by the year 2020. In other words by the year 2020 Nigeria would have been equal to the present first 20 economies of the world namely: Canada, Austria, Belgium, France, Greece, Italy, Netherlands, Spain, Denmark, Norway, Poland, Russia, Sweden, Switzerland, Turkey, Australia, India, Indonesia, Malaysia and Brazil (Ugwu, 2009). Some of the predetermined strategies of the Vision 20:2020 include to create: a vibrant and globally competitive manufacturing sector, a modern technologically enabled agricultural sector, a modern and vibrant education systems, a health sector that can support and sustains a life expectancy of not less than seventy (70) years, and provision of adequate infrastructural services (Eneh, 2011). The foundation upon which the Vision 20:2020 was based portrays our planners as a group of people without direction, it lacks properly outlined objectives, except for policy statements coming from some federal government officials for the sake of something to say (Ugwu, 2009).

Government total recurrent and capital expenditure rose from ₦ ₦1,589,270.00 billion and ₦759,323.00 in year 2007 to ₦3,314,513.33 billion and ₦918,548.90 billion in 2011, and further to ₦3,689,100.00 billion and ₦1,108,400.00 billion in 2013 respectively. These periods witnessed the Seven Points Agenda presented by federal government under Alhaji Umaru Yar'adua. The Seven Points Agenda include Power and Energy, Food Security and Agriculture, Wealth Creation and Employment, Transport sector transformation, Land reforms, Security and Education. These agenda were deemed to be running alongside with the Nigerian version of the United Nations Millennium Development Goals (MDGs) of eradicating extreme poverty and hunger by 2015; achieving universal primary education by 2015; reducing child mortality by two-third by 2015, improving maternal health care by 2015, combating HIV/AIDs, malaria and other preventable diseases by 2015; ensuring environmental sustainability between 2015 and 2020, and developing a global partnership for development by 2015 (Ibietan, and Ekhosuehi, 2013).

From the foregoing analysis, it is obvious that both recurrent and capital expenditure on the various sectors of the Nigerian economy have been expanding rapidly in pursuit of various growth oriented plans, policies and programmes. Though Nigeria's economic growth rate has averaged about 7.4 annually over the past decade, it has not reflected significantly in real terms (Usman & Nurudeen, 2010). About two-thirds of the population lives on less than one US dollar per day and the unemployment rate in 2011 was 23.9% up from 21.1% in 2010, This is an indication of a deteriorating trend (Okoro, 2013).

1.2 Statement of the Research Problem

Government recurrent and capital expenditure on the various sectors and key subsectors of the economy including education, health, electricity generation, solid minerals, oil refineries etc have increased over the years. For example, government recurrent expenditure increased from ₦ 4,805.20 billion in 1980 to ₦36,219.60 billion in 1990 and further to ₦2,632,876.50 trillion in 2011. Government capital expenditure increased from ₦10,163.40 billion in 1980

to ₦24,048.60 billion in 1990 and by 2011 it was ₦1,934,524.20 trillion (Oni, Aninkan and Akinsanya, 2014). This is due to the large receipts from sales of crude oil and increased demand for public utilities (Okoro, 2013).

However, despite the increased government expenditure, the Nigerian economy has not recorded significant growth in real terms. The state of infrastructural facilities remained extremely poor, electricity supply is epileptic, a lot of the road networks are embarrassing, the educational and health institutions are poorly equipped, there is high rate of unemployment, the level of general standard of living is below average, yet there is high rate of inflation (Usman & Nurudeen, 2010). The reliance on the receipts from sales of crude oil, has reduced the attention of Nigerians on other sectors and some key subsectors, which are vital to the transformation of the economy. For instance, the importance of the solid minerals subsector in economic diversification of the Nigerian economy cannot be over emphasized.

The performance of the Nigerian oil refineries is another source of much concern. With four refineries in place, and several depots established to facilitate distribution of the products, the country is yet relying on importation of fuel, kerosene, diesel and such other products which are supposed to be produced and distributed in abundance by the domestic refineries. The solid minerals and oil refineries are key subsectors which can significantly enhance the growth of the Nigerian economy. The solid minerals and the oil refineries subsectors are of particular importance. The solid minerals subsector is key to diversification of the economy which can ease off unemployment and the level of poverty in the Nigerian society to a large extent. Industrial plants and machineries, outboard engines, trailers, trucks, cars, generators are powered by diesel, fuel and other products from the refineries. Lack of supply of these products for a short while can crumble activities in every other sector of the economy.

Hitherto, to the best of knowledge of this researcher, these two components of government expenditure have not been captured distinctly by previous researchers in the analysis of the

effect of government sectoral expenditure on economic growth in Nigeria. Their focus have been concentrated conventionally on other sectors and subsectors such as agriculture, constructions and roads, transport and communication, environmental and housing, social and community services, crude oil and natural gas which have being simply referred to as oil and gas, etc. (Amasoma, Nwose & Ajisife, 2011; Suleiman, 2012; Eberinga & Anyaogu, 2012; Adewara & Oloni, 2012; Akpokere & Ighoroje, 2013; and Akinnibogun & Oyinlola, 2013). In order to fill this gap, this study took a step further to capture the components of government expenditure on solid minerals and oil refineries distinctly as variables in the analysis. Other variables includes health, electricity and education.

1.3 Objectives of the study

The overall objective of this study is to investigate the effect of government expenditure on the level of economic growth in Nigeria. The specific objectives include to:

a. Examine the effect of government expenditure on education on the level of economic growth in Nigeria.
b. Determine the effect of government expenditure on electricity generation on the level of economic growth in Nigeria.
c. Ascertain the effect of government expenditure on health on the level of economic growth in Nigeria.
d. Investigate the effect of government expenditure on oil refineries and the level of economic growth in Nigeria.
e. Evaluate the effect of government expenditure on solid minerals on the level of economic growth in Nigeria.

1.4 Research Questions

The following research questions were answered to ascertain the effect of government expenditure on economic growth in Nigeria.

a. To what extent has the level of government expenditure on education influenced the level of economic growth in Nigeria?
b. To what extent has the level of government expenditure on electricity generation influenced the level of economic growth in Nigeria?
c. To what extent has the level of government expenditure on health influenced the level of economic growth in Nigeria?
d. To what extent has the level of government expenditure on oil refineries influenced the level of economic growth in Nigeria?
e. To what extent has the level of government expenditure on solid minerals influenced the level of economic growth in Nigeria?

1.5 Research Hypotheses

The following hypotheses were tested in order to evaluate the effect of government expenditure on the level of economic growth in Nigeria. All the Hypotheses are stated in null hypotheses, the alternative hypotheses are implied.

Ho_1: Government expenditure on education has no significant effect on the level of economic growth in Nigeria.

Ho_2: Government expenditure on electricity generation has no significant effect on the level of economic growth in Nigeria.

H_3o: Government expenditure on health has no significant effect on the level of economic growth in Nigeria.

Ho_4: Government expenditure on oil refineries has no significant effect on the level of economic growth in Nigeria.

Ho_5: Government expenditure on solid minerals has no significant effect on the level of economic growth in Nigeria.

1.6 Scope of the study

In Nigeria, the public sector consists of the Federal, State and Local Governments. However, this work was concentrated on the expenditure of the federal government. It evaluated federal government expenditure in selected sectors and some key subsectors of the economy and determined their effect on economic growth. These include the solid minerals and the oil refineries subsectors, others were the health, electricity and the education sectors. Thus, the main focus of this study was to evaluate the effect of government expenditure on the level of economic growth in Nigeria. The study made use of secondary data collected from various issues of World Bank Development Indicators for Nigeria. The data covered the period of 1980 to 2013.

The scope of statistical tools of analysis include the Augmented Dickey-Fuller (ADF) Unit Root Test, the Johansen Cointegration and it's implied Vector Error Correction Model (VECM), embracing Overparameterize and Parsimonious Test. Other associated test with this methodology include Diagnostic Checks, Variance Decomposition Test, etc.

1.7 Limitation of the Study

Government sectoral expenditure is a major instrument which can be used to generate sustainable economic growth in an economy, especially in developing economies. However, it has been argued that increased government sectoral expenditure may not have the expected salutary effect in developing economies due to their high and often unstable level of public debts. In the light of these contradictory views, the coverage of this study would have been extended to other countries in Africa. However, due to financial constraints, this study was limited to the Nigeria economy. In the same manner, the study was limited to specific sectors and some key subsectors of the Nigerian economy, these include the solid minerals and the

oil refineries subsectors, others are the health, electricity and the education sectors. This limitation was due to the fact that it would not be expedient to cover all the sectors and the key subsectors of the economy in detail in a single research of this nature.

1.8 Significance of the study

Attainment of sustainable economic growth is one of the major concerns of various economies all over the world. In the view of the Keynesian economist, government expenditure is a major tool that can be used to generate sustainable growth in an economy through its multiplier effect. However, the effectiveness of government expenditure as a tool for stimulation of economic growth is yet a misery in developing economies including the Nigerian economy. Thus, the relevance of this study cannot be overemphasized.

It is the hope of this researcher that the results of this study will be of immense benefit to the nation in general as it will provide valuable input for policy decision making. Students and other researchers who want to carry out research on this topic or subject area, will also benefit immensely from this study as the findings will provide them a good stepping stone in their adventures. Most importantly, the result of this work will go a long way in filling the gap of existing body of knowledge in this area of study.

1.9 Operational Definition of Terms

Some of the terms used in this study are hereby defined in its context.

a. Economic Growth

Economic growth is typically taken to mean an increase in the real level of net national product. In other words, economic growth refers to a positive change in the level of production of goods and services by a country over a certain period of time. Nominal growth is defined as economic growth including inflation, while real growth is nominal growth deflated by the rate of inflation. In this study, economic growth is viewed in respect of its

response to changes or increase in government expenditure in the context of the Keynesian expenditure model as an instrument of economic stabilization.

b. Government Expenditure

Broadly, government expenditure means the expenditure made by local, state and national government or government agencies as distinct from those expenditures made by private individuals, private organizations or firms. However, this study is only concerned with the expenditure made by the national or federal government. This expenditure form an important part of aggregate expenditure which plays a major part of the Keynesian expenditure model in determination of the equilibrium level of national income. The model holds that government manipulation of her expenditure is a key to attainment of optimum level of economic growth in an economy. This is the theoretical framework on which this study is anchored.

c. Sector

A sector is an economic term for a part of the national economy or business activity. Thus a sector of a country's economy is a particular part of it. A particular sector consist of all the companies which are involved in a particular area of work or all the companies that are run according to a particular system producing similar goods and services in satisfaction of societal needs and wants. Examples are health, electricity, education sectors, etc. This study is concerned with effect of government expenditure on some selected sectors and key subsectors on the level of economic growth in Nigeria, in the context of the Keynesian expenditure model.

d. Subsector

A subsector is an area which is a part of another larger one. In other words, a sector is made up of several subsectors, e.g. the industrial sector is made up of certain subsectors such as crude petroleum and natural gas; solid minerals which include coal mining, metal ores, tin,

gold, etc; manufacturing which include oil refining, cement, textile, wood products, food and beverages, iron and steel, and other manufacturing activities. This study is concerned with key subsectors such as the solid minerals and the oil refineries.

CHAPTER TWO
REVIEW OF RELATED LITERATURE

2.1 Conceptual Framework

The term government expenditure is used in two context: judicial and economic. In judicial term, government expenditure incorporates the whole of the financial resources needed to run public institutions. It thus shown that government expenditures are carried out through a complex group of institutions and public entities authorised to perform payment operations in respect of public financial resources, as per legislation in force. In economic context, the term government expenditure refers to all the economic processes that ensure the distribution of the gross domestic product or financial resources so that actions and objectives of public interest at a national level can be performed (Abdinasir, 2013)

Thus government expenditure refers to the expenses which the governing body incurs in the day to day running of it's activities and those incurred for the provision of other tangible goods for the benefits of the society and the economy. Government expenditure is mainly classified into recurrent and capital expenditure (Bhatia, 2003)

The recurrent expenditure is more frequent in occurrence as it is mainly used for the lubrication of the machinery of government agencies and transfers of diverse nature, as well as the maintenance of the items/assets provided through capital expenditure (Bhatia, 2003). In other words, recurrent expenditures are government expenses on administration such as wages, salaries, interest on loans maintenance (Muritala & Abayomi, 2011).

Capital expenditure on the other hand, is incurred on items that are of long lasting nature. This include expenditure on capital projects such as roads, airports, education, And so, both current and capital expenditures can be incurred on the same item. But while capital expenditure provides the said items for governmental and general uses, the recurrent expenditure provides for their maintenance (Odeh, 2005).

2.1.1 The Concept of Government Sectoral Expenditure

Government sectoral expenditure refers to both recurrent and capital expenditure borne by the government on the various sectors of the economy. Examples include:

(a) Government Expenditure on Education

This item captures the share of government sectoral expenditure on education to total government sectoral expenditure. It includes the expenditure the government incurs to fund primary education up to higher education by paying teachers and lecturers, construction of learning infrastructure such as classrooms, lecture halls, offices and purchases of learning aids and equipment. It also includes expenses on scholarship whether local or abroad, etc.

(b) Government Expenditure on Electricity

This item captures the share of government sectoral expenditure on electricity generation. This includes expenditure on procurement of equipments and construction of dams, power line and stations, transformers, offices etc. it also includes expenses on training, salaries and wages, etc.

(c) Government Expenditure on Health

This item captures the share of government sectoral expenditure on construction of hospitals, medical equipments, drugs, training of doctors and nurses, salaries and wages, etc.

(d) Government Expenditure on Solid Minerals

This item captures the share of government sectoral expenditure on research, training and exploration of solid minerals. These include purchases of equipment, building and construction of quaries and mines, offices, salaries and wages, consultancy, etc.

(e) Government Expenditure on Oil Refineries

This item captures the share of government sectoral expenditure on construction and rehabilitation of refineries, offices, turn around maintenance expenses, training, salaries and wages, etc.

2.2 Economic Policies and Trend of Government Expenditure in Nigeria.

The magnitude of government expenditure to a large extent is determined by the economic policies or development plans of the period. Successive governments in Nigeria have adopted several economic policies or development plans as appropriate strategies to address challenges of economic growth and development in the country, (Iheanacho, 2014). In section 2.2.1, this study reviewed of these policies in order to enhance understanding of the trend of government expenditure in Nigeria. For consistency, the term "national development plans" will be applied in most part of this analysis.

2.2.1 National Development Plans in Nigeria.

(a) First National Development Plan (1962 – 1968)

Immediately after attainment of independence in 1960, the first National Development Plan (1962-1968) was launched. The objectives of the plan were: to bring about equal distributions of national income; to speed up the rate of economic growth; to generate savings for investments so as to reduce its dependence on external capital for the development of the nation; to get enough capital for the development of manpower; to increase the standard of living or the masses particularly in respect of food, housing, health and clothing and to develop the infrastructure of the nation (Onyewigwe 2009). It had a proposed total investment expenditure of about ₦2,132 million. The public sector was expected invest about ₦1,352.3million while the remaining investment expenditure of ₦780 million was expected to be made the private sector (Obi, 2006).

Though, the plan appeared impressive, but due to political upheaval in the country which resulted in 30 month civil war, the plan almost became redundant. According to Nnadozie

(2004), the objectives and targets of the 1962-1968 plan were too large and over-ambitious and therefore out of tune with financial technical and managerial capabilities of the country. This made the plan to lack clarity and precision in the formulation of objectives and targets (Onah, 2010). Despite the weaknesses of the plan, some major projects were executed during that period. These included the Nigeria Security and Minting Plant, the Jebba Paper Mill, the Sugar Mill, Niger Dam, the Niger Bridge, Onitsha, Kaingi Dam and Port Harcourt Refinery.

(b) The Second National Plan (1970 – 1975)

At the end of 1970, national reconstruction and rehabilitation were the focus of attention of the federal government. In order to fasten the growth of national economy and ensure equitable distribution national income, it became imperative to launch the Second National Development Plan. Initially, the plan, was meant to cover the four year period, 1970-`974, it was later extended to cover the fiscal year of 1974-1975. The plan put forward five national objectives: a United, strong and self reliant nation; a just and egalitarian society; and land of bright and full opportunities for all citizens; and a free and democratic society (Onyewigwe, 2009). Ayo (1988) outlines the difference between this plan and other as:

"Besides being much bigger in more diversified in its project composition, it was in fact the first truly national and fully integrated plan which viewed the economy as an organic unit: the twelve states were fully integrated into national development plan. Also, unlike the first plan, the second plan was formulated wholly by Nigerians."

The total capital projected expenditure of about ₦4.9billion was contained in the plan. Out of this figure, the proposed public sector investment was ₦3.3 billion while the private sector was expected to invest ₦1.6 billion (Obi, 2006). The highest order of priorities in public sector projected expenditure were accorded to transport and communication, manufacturing, housing and education (Onah 2006). Second National Development plan laid much emphasis on indigenization. In the opinion of Okowa (1991) "indigenization was seen by this plan as an instrument towards the long term objective of economic independence". Although the

Second National Development Plan also attached importance on agriculture, industry and the development of high level and intermediate level manpower, the plan was beset with problems as in the first National Development Plan. Onah (2006) alludes to this fact that "the high priority given to agriculture and industry was not matched with action during implementation of the plan", One of the basic tenets of Second National Development Plan is indigenization policy. Indigenization policy was carefully designed to encourage Nigerians to participate fully in the commercial, industrial and financial activities of the Nigerian economy. Several indigenization decrees were made to realize the objectives of this policy (Onah, 2006)

It is a sad commentary that close to years after enactment of the first indigenization Decree (1972), out of about 950 affected enterprises, only 314 or 33 percent were confirmed as having fully complied with the provisions of the decree (Onah, 2006). It should also be emphasized that despite indigenization policy, there were over 16 multinational oil companies representing the United States, Dutch, Japanese, British, Italian, German and French interest that have firm and massive grip on Nigeria's Petroleum till date (Koha, 1994). An interesting feature of the Second National Development Plan was the objective of creating "a free and democratic society" that was being challenged by the military government. This objective was put in place without considering any discussion on political development in the plan document and any means of returning to civilian rule. Despite the inadequacies of plan, it witnessed achievements in the areas of industry and agriculture. The industrial sector recorded more improvements. Many industries in the war affected areas were rehabilitated, coupled with establishment of two salt factories in Kaduna. Super phosphates project and two vehicle assembly plants were also established. Other achievements included the establishment of colleges of technology and trade centres by state governments and reconstruction of about 3000 kilometres of roads (Egnomwan & Ibodje, 2001).

(c) The Third National Development Plan (1975:1980)

The Third National Devleopment Pan had a projected jumbo investment of N30 billion which was later increased to N43.3 billion. This represented ten times that of the Second Plan and about 15 times that of the First Plan (Obi, 2006). The objectives of the plan were: Increase in per capita income; more even distribution of income; reduction in the level of unemployment; increase in the supply of higher level manpower; diversification of economy; balanced development and indigenization of economic activities (Obi, 2006). The approach of the plan was to utilize resources from oil to develop the productive capacity of the economy and thereby permanently improve the standard of living of the people. Therefore, the plan was premised on the need for the public factors to provide facilities for the poorer sections of the population including electrification, water supplies, health services, urban housing and education (Egonmwan & Ibodje, 2001).

The assessment of the plan showed it focused give priority to projects and programmes that would directly impact positively on the rural dwellers, but the meagre allocations to agriculture and social development schemes did not indicate sincere intention of the government to achieve the objective. According to Okigbo (1989) agriculture and social development scheme (education, housing, health, welfare etc) that have direct bearing on the living conditions of the rural population received only 5 percent and 11.5 percent respectively of the financial allocations contained in the plan. It is appropriate to state here that the meagre allocation to agriculture and social development schemes, which were priority areas, indicated the "lack of focus of the planners to careful sifting of the criteria for allotting principles" (Onah, 2006). In this context, nobody should expect the plan to achieve the desired objective. Like other plans before it, the third plan did not really achieve its set targets. Irrespective of the inadequacies of this plan, it witnessed achievements in some areas. In the opinion of Okowa (1991), "in terms of achievement, the manufacturing sector recorded the fastest growth rate with an average of 18.1 per annum. Some other sectors that witnessed growth were building and construction and government services.

(d) Fourth National Development Plan (1981-1985)

The Fourth National Development Plan (1981-1985) came on board in 1981. It was the first that the civilian government prepared since the invervention of the military in Nigerian politics in 1966. The objectives of the plan according to Obi (2006) were:

(i) Increase in the real income of the average citizen:
(ii) More even distribution of income among individuals and socio-economic groups
(iii) Reduction in the level of unemployment and under employment;
(iv) Increase in the supply of skilled manpower;
(v) Reduction of the dependence of the economy on the narrow range of activities;
(vi) Increased participation by the citizens in the ownership and management of productive enterprise;
(vii) Greater self reliance that is, increased dependence on local resources in seeking to achieve the various objectives of society;
(viii) Development of technology;
(ix) Increased productivity and
(x) The promotion of a new national orientation conducive to greater discipline, better attitude to work and cleaner environment.

The projected capital investment of the plan was put at N82 billion. Out of this figure, the public sector investment was N70.5 billion while the private sector was expected to invest N11.7 billion (Obi, 2006).

According to Adedeji (1989) the plan was "the largest and most ambitious programme of investment ever launched in Nigeria". The plan also adopted as its main strategy the use of resources generated from oil to ensure all-round expansion in production capacity of the economy and to lay a foundation to self sustaining growth (Egonmwan & Ibodje, 2001). It

was anticipated in the Fourth Plan that exports led by petroleum products would generate enough funds to actualize the plan that had been formulated. Eventually, the revenue realized from exports were far below anticipated projections. It is a sad commentary that only 54 percent of the export proceeds projected for the period were realized in 1984. For instance, it was projected that ₦79.449 million would be earned from petroleum exports between 1980 and 1984, but only ₦52.7 million some 66.4 per cent of the projected figure was earned (Okigbo, 1989).

With the dwindling resources to finance the Fourth Plan, the Nigerian economy witnessed debt service and balance of payment problem coupled with high level of inflation. Most of the projects that were started at the beginning of the plan period could not be completed and these together with several spillover projects from previous plan had to be abandoned (Jaja, 2000). The growth rate of Gross Domestic Product (GDP) per annum was only 1.25 percent compared to 5.5, 13.2 and 4.6 percent under the previous National Development plans (Onah, 2010). Another problem of this plan was in the cost of living that led to a reduction in the standard of living of a common man. There was also phenomenal increase in unemployment among school leavers in the country. Our external reserves kept on declining. Commenting on the plan, Alapiki (2009) observed that "the plan period 1981-1985 proved to be the most dismal in the economic history of Nigeria at that time". The Fourth National Development Plan recorded some achievements in some areas in spite of its drawbacks. The implementation of Agricultural Development Programme (ADP) in most stares was successfully completed, the commissioning of Egbim Power Station, Dry Project at snake Island, Lagos and the 87 telephone exchanges located all over the federation which increased the number subscribers to telephone lines from 188,000 in 1981 to 297,000 in 1985 (Egonmwan and Ibodje, 2001).

(e) The Fifth National Development Plan and Structural Adjustment Programme (SAP) (1986 – 1989)

(1986-1989) Due to poor implementation of the Fourth National Development Plan, a machinery was put in place for preparation of the Fifth National Development Plan. In order to facilitate the exercise, a conference was held at the University of Ibadan in November 1984 to deliberate on the appropriate mechanisms for the Fifth National Development Plan. The conference suggested some measures which formed the corner stone of the policies and strategies incorporated in the Fifth National Development Plan. The objectives of the Fifth National Development Plan were:

(i) Diversification of the nation's economy away from the monocultural one to which it has been pushed by the fortunes of the oil sector;

(ii) Revitalization of the agricultural sector with a view to achieving thorough integrated rural development programmes;

(iii) Domestic production of raw materials for local industries in order to reduce the importation of locally manufactured goods and

(iv) promotion of employment opportunities in order to arrest the deteriorating mass unemployment (Onyewige), 2009).

The primary focus of the plan was to correct the structural defects in the economy and create a more self-reliant economy that would largely be regulated by market forces. The economy was therefore expected to be restructured in favour of the production sector especially those of agriculture and manufacturing sectors of the economy were to be emphasized during the plan (Ayo, 1988). The Fifth National Development Plan did not materialize. It was later incorporated in the Structural Adjustment Programme (SAP). The two year SAP brought to an end the five year planning model in Nigeria. The Federal government changed the two year model to three year rolling plans.

(f) The Perspective Plan and Rolling Plans (1990-1998)

The Babangida government had abandoned the previous fixed five year development plans and replaced it with two types national plans viz: perspective plan which will cover a period of 15-20 years that will provide opportunity for a realistic long-term view of the problem of the country and the rolling plan which will cover three years subject to review every year to ascertain whether economy is progressing or not. The perspective plan which was to start from 1990 together with rolling plans did not take off until 1996 when Abacha set-up the Vision 2010 Committee.

The main report of Vision 2010 submitted to Abacha government in September 1997 among other things recommended that the vision should provide the focus of all plans including long (perspective), medium (rolling) and annual plans (budgets) (Adubi, 2002). Therefore, the Vision became the first perspective plan for the country even though it failed to proceed beyond Abacha's death in 1998. The three year rolling plan became operational from 1990 with the introduction of the First National Plan (1990-1992). The primary objective of the rolling plan was to afford the country the opportunity of revision in the "midst of increasing socio-political and economic uncertainties" (Ikeanyibe (2009). But the preparation of medium term plans turned out to be a yearly event and became almost indistinguishable from annual budgets. Rolling plans are being prepared annually at all levels of government. At the end of about ten rolling plans from 1990 to 1999, Nigerians are not better of than they were during the years of fixed medium term planning (Adubi, 2002).

(g) National Economic Empowerment and Development Strategy (NEEDS) (2003-2007)

The Obasanjo's government was re-elected in 2003, it realized the necessity for comprehensive socio-political and economic reform of the country since the previous plans did not put the Nigerian economy on sound footings. It was in this context that the National Economic Empowerment and Development Strategy (NEEDS) that appeared to be a road map to address the development challenges in Nigeria was launched. The basic thrust of

NEEDS focused on: empowerment, wealth creating, employment generation and poverty reduction as well as value reorientation.

It is worrisome that the government has not realized most of the professed objectives of NEEDS. Within the period of NEEDS 2003-2007, Nigeria's annual budget crossed the threshold of billions into trillions of naira, but the per capita income of Nigeria falls into the one dollar per head level of the poorest countries (Ikeanyibe, 2009). Education which is expected to empower citizens has witnessed increase in the number of educational institutions from primary to tertiary institutions. The universities have increased from about forty in 1999 and mainly belonging to federal and state governments to about eighty nine in April 2007, with greater private sector participation (Ikeanyibe, 2009). It is regrettable that despite increase in the number of educational institutions, the cost of education is very exorbitant. For example an average private university charges fees as high as N250,000 per session. This has led to the reduction of number of citizens is grievously hampered.

NEEDS had planned to create about seven million jobs by 2007, but the reality is that most policies adopted by the government to realize this objective were inimical to employment generation. In her effort to reform government institutions, many employees have actually lost their jobs. The Central Bank of Nigeria alone severed 804 employees through mandatory retirement in 2005 (CBN, 2005). In the area of infrastructural development, NEEDS has also failed to achieve the expected objectives. Electricity which coincidently was a major policy choice area of the government rather than show improvement, seemed to have declined tremendously (Ikeanyibe, 2009). The poor supply of electricity in the country has reached a dangerous proportion by 2007. Ikeanyibe, (2009) observed that "we have to look beyond Obansanjo's reform package if we must get out of the power quagmire". As a medium term plan, most of the objectives of NEEDS should have been achieved before the expiration of Obasanjo's administration in May 2007. The truth is that NEEDS as a development planning did not achieve the expected results like previous development plans in Nigeria. The four

main objectives Viz: employment generation, poverty reduction, wealth creation and value re-orientation remains only on paper.

(h) Vision 20:2020

Nigerian leaders under President Olusegun Obasanjo have added Vision 20:2020 to one of its endless search for appropriate development strategy. The objective of the Vision 20;2020 is to make Nigeria one of the first 20 economies in the world by the year 2020. To actualize this lofty dream, Nigeria's GDP per capita must grow at an incalculable rate (different from the present 0.8%) from US$ 752 to $30,000) at least and the GDP of those countries (over $29,000) Nigeria wishes to displace and/or join must stop growing (now they grow at 2%) (Eneh, 2011). The rural areas in Nigeria must be transformed from age-long poverty and misery centres to urban status of world standard Nigeria's education, health, power, agriculture, manufacturing and other sectors must receive such miraculous boasts that in 10 years time, the country will compare with high income OECD nations in all development respect (Eneh, 2011). Nigeria must move from its 158th (2007) position in the UNDP human development ranking to the first 20 position in the world (Eneh, 2011). Nigeria's Vision 20:2020 like other development plans and initiative is nothing but a mere vision until it is realized. At present, Nigerians are beset with hunger and starvation, dilapidated road network, poor power supply, underdeveloped rail system and insecurity of lives and property. Is vision 20:2020 attainable under the present state of affairs? Based on the previous experience of the failures in Nigeria's development plans and initiatives the vision 20:2020 is bound to fail (Eneh, 2011)

2.2.2 Trends of Government Expenditure in Nigeria

In Nigeria, government expenditure has continued to rise due to the huge receipts from production and sales of crude oil, and the increasing demand for public (utilities) goods like education, electricity, road construction, health, oil refineries, transport and communication, etc. Besides, there is increasing need to provide both internal and external security for the

people and the nation (Obi,2006). Available statistics show that total government expenditure (capital and recurrent) and its components have continued to rise in the last three decades. For instance, government total recurrent expenditure increased from ₦3,819.20 billion in 1977 to ₦4,805.20 billion in 1980 and further to ₦36, 219.60 billion in 1990. Recurrent expenditure was ₦461, 600.00 billion and ₦1,589,270.00 billion in 2000 and 2007 respectively, and rose to ₦3,314,513.33 and ₦3,689.100.00 in 2011 and 2013 respectively. In the same manner, composition of government recurrent expenditure shows that expenditure on education, electricity, road construction, health, oil refineries, agriculture, defence, internal security, transport and communication, etc increased during the period under review.

Moreover, government capital expenditure rose from ₦5, 004.60 billion in 1977 to ₦10, 163.40 billion in 1980 and further to ₦24, 048.60 billion in 1990. The value of capital expenditure stood at ₦239,450.90 billion and ₦759,323.00 billion in 2000 and 2007 respectively, and rose to ₦918,548.9 and ₦1,108,400.00 in 2011 and 2013 respectively. Furthermore, the various components of capital expenditure (that is) education, electricity, road construction, health, oil refineries, agriculture, defence, internal security, transport and communication, etc, also show a rising trend during the period under review (CBN Statistical Bulletin,2013). The concern of scholars in this regard is the extent to which the rise in government expenditure has impacted on economic growth in Nigeria.

2.3 Theoretical Review

The nexus between government expenditure and economic growth has been an issue of serious debate among scholars over time. Classical economic theorists such as David Ricardo, J.S. Mill, A.C. Pigou etc are of the view that the government should not interfere in the economic life of the people and that the main duty of the government is to maintain law and order. The idea is that, in a market economy, the forces of demand and supply has the potential capacity to boost the economy, even when in recession, without government intervention.

However, the income and Expenditure model developed by John Maynard Keynes provided the view that the real GDP equilibrium level corresponds to the current aggregate expenditure level of a nation. This is based on the assumption that the level of output and employment depends directly on the level of aggregate expenditure, in the sense that increased government spending will not only boost demand directly but will also set off a chain reaction of increased demand from workers and suppliers whose incomes had been increased by the government expenditure.

However, Wagner's Law of Increasing State Activities, though believes that there is a functional relationship between the growth of the economy and government expenditure, has an alternative view. It holds that the growth of government expenditure results from increase in the proportion of private sector activities in an economy. In other words, Wagner's position is that government expenditure does not impact on the growth of an economy, rather, it is the growth of an economy that impacts on the growth of government expenditure. That is, increase in government expenditure is a function of economic growth. Thus, the main bone of contention between the Wagner's law and the Keynesian model is causality issue.

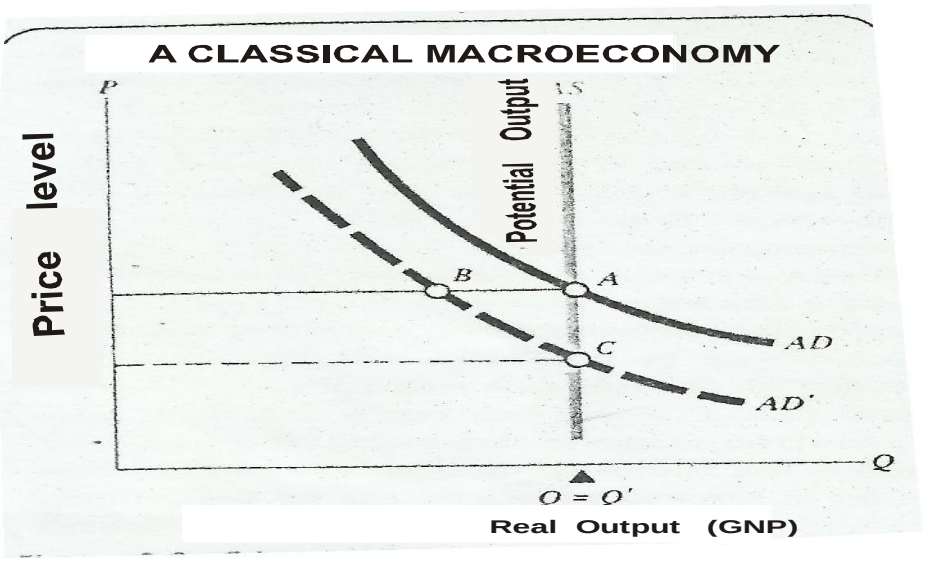
Thus, there are divergent views of modern macroeconomics functioning today. One set of the views is called the classical. This approach emphasizes the role of price adjustment in competitive markets. It stresses the way that prices and wages can move to clear the markets. That is, to wipe out excess demand or supply by raising or lowering the price of an input or output. The classical approach was dominant during much of the history of economic thought.

The second blow was the development of the Keynesian approach. Published first in 1936, Keynes' General Theory presented an alternative approach to understanding macroeconomics. It was one that allowed, indeed, insisted that periods of extended

unemployment are intrinsic properties of a capitalist economy. The central difference between the Keynesian and classical models was Keynes argument that wages and prices are inflexible. Put differently. Markets do not clear because wages and prices are such flexible that they can automatically move to the point where supply and demand are equalized. Thus he emphasized government planned expenditure as a tool to manipulate the economy in order to achieve a desirable equilibrium level of income and output.

Another view is the Wagner's Law of Increasing State Activities. It sees increase in government expenditure as a function of economic growth, thereby igniting a causality debate. Other theories which are popular in explanation of the nature of government expenditure include the Wiseman and Peacock theory, the Leviathan theory, etc. These theories will be examined in turn.

2.3.1 The Classical Model



The classical macroeconomic view can be seen by the use of aggregate supply and demand diagram shown above. The AD curve is drawn in its usual downward-sloping fashion: note that the classical AS curve is vertical.

Why vertical? To answer this question, lets consider the AS curve a bit more carefully, the AS curve traces out the set of prices at which businesses are willing to sell different levels of output. Thus, in an initial equilibrium – represented by point "A" in the Figure above, output is at its potential and the aggregate price level is equal to "P".Now a classical economist would insist that prices and wages are completely flexible. So we may consider a new equilibrium in which all prices, wages, and costs have doubled. In the new situation the aggregate price level is doubled.

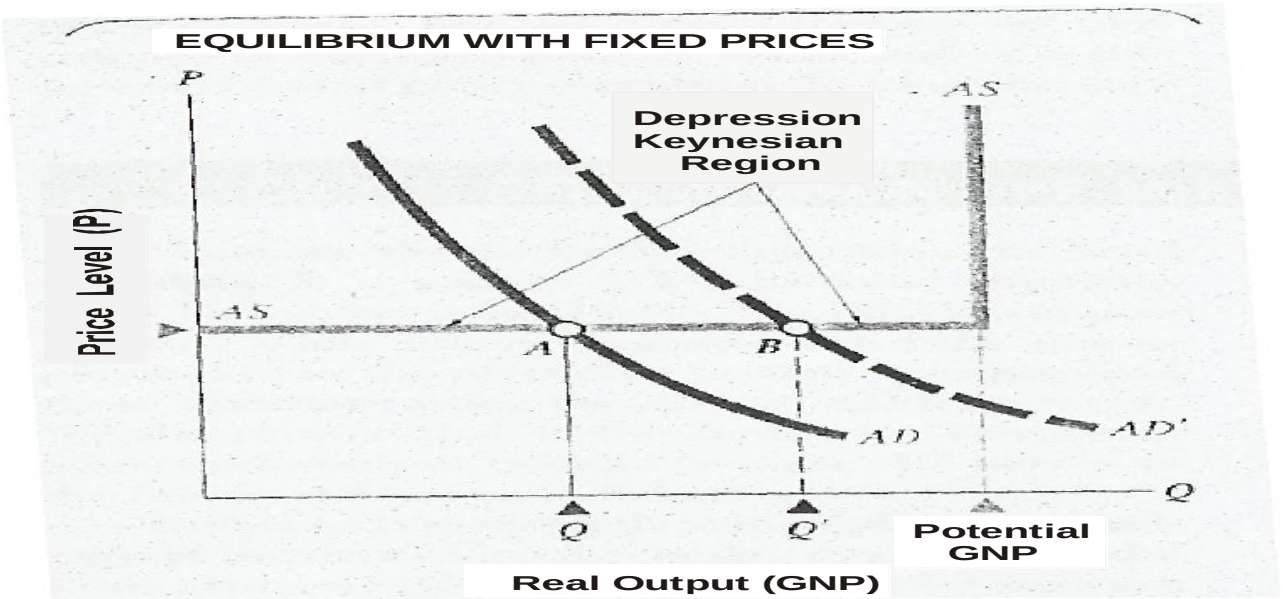
We can now see the implication of such a situation for the AS curve. In a classical world, as the general price level moves up or down in a balanced way, all prices and costs are free to adjust flexibly. In such a case, firms would not change their output. Thus the AS curve would be vertical, because prices and wages are perfectly flexible, moving quickly in response to shocks. If tax increases or a tightening of monetary policy leads consumers or businesses to spend less, prices and wages would move quickly to restore full employment.

Using the AS & AD curves shown in the Figure, we can trace the effects of a change in aggregate demand in the classical world. Assuming that aggregate demand falls, because of money supply cut which raises interest rates, a government spending decrease, or any of the other things that affect AD, then as a result, the AD curve shifts to AD^1 in the Figure above. In the classical world, the lightening demand shock would be followed instantly by the thunder of all wages and prices adjusting. We would very quickly see a return to full employment with full utilization of plants and equipments.

When the system had settled down, indeed the overall price level would have fallen from P to P^1 as shown in the figure. But the level of real output would not have changed at all. Why not? because the price mechanism would have acted quickly enough to ensure that supply equalled demand in each individual market and for the economy as a whole. Prices would have moved quickly enough to ensure that all oil or wheat that producers wanted to sell could

be sold. Wages would have moved quickly enough so that all workers willing to toil at existing wage rates could find jobs, no involuntary unemployment would exist.

2.3.2 The Keynesian Model



We can see the essence of the argument in the figure above. This shows the polar case of the Keynesian depression model, where the AS curve is completely flat. Why is it flat? because prices and wages are unrealistically assumed to be completely sticky or inflexible in the short run, and because there are unemployed resources. Both of these factors are necessary for the validity of the model i.e. sticky wages, prices and unemployed resources.

Before turning to this analysis, note that to assume wages and prices are completely rigid or sticky is surely too extreme, therefore it is relative in this context, as was made clear by Keynes.

As shown on the figure above, an economy can be in equilibrium in varied ways, as the AS and the AD curves intersecting in the flat region of the AS curve. Such equilibrium displays two differences compared to the classical model. First, a modern economy like the United States or Europe can easily settle into an equilibrium level with unemployment, even massive unemployment. Thus if the AD curve intersects the flat AS curve far to the left, as is illustrated at point A in the figure above, it indicates that output may be in equilibrium far below the economy's potentials.

Keynes thus proclaimed that unemployment could be a durable, persistent condition of a capitalist economy. A nation could remain at the low employment level, high miserable condition at point A for long periods i.e. there is no automatic mechanism that guarantees a quick return of national output to it's potential.

Keynes' second conclusion follows from the first. Through active government macroeconomic policies, the economy can be raised up from the low employment equilibrium. For example, by increasing the money supply or raising government spending, economic policy would shift the AD curve to the right, from AD to AD^1. As a result, output will increase from Q to Q^1 , reducing the gap between actual and potential national output. Thus economic policy matters.

Thus during the great depression in the 1930's, Keynes declared that governments should increase spending in order to boost their economy. Though, this stand was against prevailing opinion as at then, nevertheless the keynesian model remains a legacy till date.

2.3.3 Wagner's Law of Increasing State Activities

Wagner (1893) based his law of increasing state activities on the historical facts, primarily of his country, Germany. According to him, there are inherent tendencies for the activities of the different layers of government to increase intensively and extensively. There is a functional

relationship between the growth of the economy and the growth of the government activities such that the government sector grows faster than the economy. The growth in government sector may have resulted from increases in the proportion of the private sector in the total economy.

He stated that as society becomes developed industrially and commercially, social and legal relationships within the system become complex. That public outputs are income elastic and so a higher demand on them as per capital income increases will lead to increase in public expenditure. Thus, the bottom line is that increase in government expenditure is a function of economic growth.

In the view of the Wagner's law, there are three main reasons for the increase in the government's role. First, industrialization and modernization would lead to increased economic activities in the private and in the public sector increasing government expenditure on law and order as well as on contractual enforcement. Secondly, an increase in real income would lead to an expansion in government "cultural and welfare" expenditures. Wagner cited two areas which are education and culture in which the government could be a better provider than the private sector. Thirdly, natural monopolies such as road networks including railways had to be taken over by the government because the running cost of such kind of activities are too expensive and the private sector would be unable to obtain such huge investment to finance the development of these activities. This causality relationship can easily be visualized from the diagram below:

FIGURE 2.3.1 THE WAGNER'S LAW

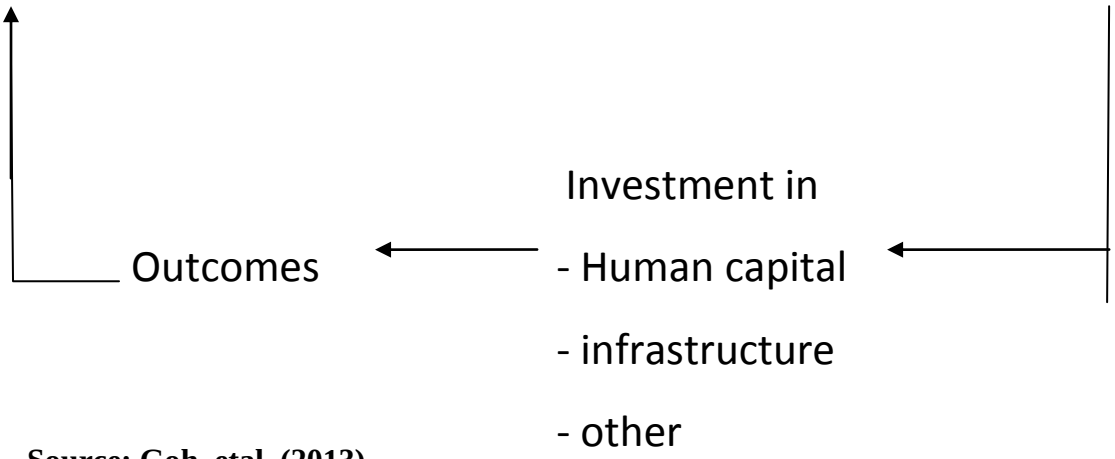
Source: Goh, etal. (2013)

In contrast, the Keynesian view suggests that government expenditure contributes positively to the economic growth of a nation. The contribution will be based on the multiplier effects stated in the Keynesian model.

$$Y = C + I + G + Xn$$

Y is the aggregate output (GDP), C is the consumption, I is the investment, G is the government expenditure and Xn is the net exports (exports-imports). The following diagram shows the circular flow of the Keynesian view.

FIGURE 2.3.2 THE KEYNESIAN VIEWS



Source: Goh, etal. (2013)

The causality between economic growth and government expenditure can be unidirectional, bidirectional or no causality. Unidirectional causality can be running from government expenditure to economic growth and vice versa.

2.3.4 Wiseman and Peacock Theory

Wiseman and Peacock in their study of public expenditure in UK for the period 1890 – 1955 came up with a hypothesis. The main thesis of the authors is that public expenditure does not increase in a smooth and continuous manners, but in jerks or step-like fashion. At times, some social, political and economic upheavals or other large scale social disasters such as war, famine, earth-quake etc. may take place, creating the need for increased public expenditure of which the existing public revenue cannot meet.

In the light of the inadequacy of the existing revenue, the government and the people will in agreement review the revenue position and attain a new level of tax tolerance which is associated with a greater burden of taxation on the people. The movement from the old level of expenditure and taxation to a new and higher level is known as the **displacement effect.**

While the inadequacy of the revenue as compared with the required expenditure is known as the **inspection effect.**

Thus for every major disturbances the existing level of government expenditure and revenue would be distabilized leading to government assumption of larger proportion of the total national economic activities. In this view, there is a high tendency for the central government level of economic activities to grow faster than that of the state and the local government, this situation is known as the **concentration effect** (Bhatia, 2003).

Summarily, this hypothesis regards taxation as the main constraint of government expenditure. And that as the economy is growing, tax revenue at constant tax rate would rise, thereby enabling public expenditure would show a gradual upward trend. However during periods of social upheaval, the gradual upward trend in government expenditure would be disturbed. And public expenditure would be displaced upward sharply, and for the period and after the period of the crises, displaced public expenditure will never fall back to its original level (Muritala and Abayomi, 2011).

On the face of it, Wiseman and Peacock hypothesis looks quite convincing, but, we must remember that they are emphasising the recurrence of abnormal situations which causes sizeable jumps in public expenditure and revenue. In all fairness to historical facts, we must not forget that on the account of advancement of the economy and the structural changes therein, there are constant and regular increments in public expenditure and revenue (Bhatia, 2003).

2.3.5 The Leviathan Theory

The Leviathan theory propounded by Brenan and Buchanan is another popular theory which explains the nature of government expenditure. The theory emanates from the fact that the central government is viewed as a revenue maximising Leviathan (Giant) that seeks to

maximise her revenue by fiscal decentralisation of the central government monopoly on taxation. This theory maintains that the more decentralized the central government, the lower the government spending in the economy, because the decentralized units will be responsible for revenue generation and expenditure disbursement. By this, the pressure on the central government reduces and it is transferred to the sub-units, i.e. the states and local governments. This is the situation where the Leviathan trait is obvious as the central government has overbearing fiscal jurisdiction in legislation, administration and collection of taxes (Uchenna & Osabuohien, 2012).

In other words the theory suggests that the central government expenditure experiences rapid increase under centralised fiscal policy, while decentralised fiscal policy experiences reduction in the central government expenditure which may or may not have direct or indirect relationship or coincide with the level of economic growth in an economy. The theory noted that greater competition amongst the decentralized units leads to lower pressure on the central government and thus reduces her expenditure (Brennan & Buchanan, 1980).

Another assertion of the theory is that government expenditure experiences sharp growth rate in response to the activities of bureaucrats or politicians seeking to maximize their own utility. According to this theory, politicians receives utility either directly or indirectly from excess public spending. Utility can accrue directly to politicians or bureaucrats since excess public spending represents higher in-kind or money income for them. Alternatively stated, excess public spending provides bureaucrats with greater amounts of the five P's: power, prestige, pay, perquisites and ability to award patronage (Rexford, 1991)

Excess public spending may also indirectly provide utility to politicians as they satisfy the rent-seeking behaviour of special interest groups. Politicians can increase their probability of becoming re-elected by supplying wealth-redistributing special interest group legislation and, in return, demanding votes and campaign contributions from special interest groups. The

special interest group legislation enables politicians to put together an overall majority of votes by combining various programmes that benefit several separate interest groups with the cost falling disproportionately on the general public. The implicit logrolling involved in satisfying the different demands of the various interest groups suggests that public spending is higher than the median level of expenditure, which may or may not stimulate commensurate level or rate of economic growth (Rexford, 1991).

Olson (1982) draws a theoretical connection between years of democratic stability and increase government size. He argues theoretically that special interest groups have more time to accumulate during longer periods of democratic stability and finds empirically that years of democratic stability were directly related to the size and number of special interest groups in the states of the U.S. and were associated with larger public sector expenditure (Rexford, 1991).

The analysis above provides a clear picture of the opinion of the five theories reviewed in this study about the relationship between government expenditure and economic growth. However, this study is adopting the Keynesian view to examine the relationship between government expenditure and economic growth in Nigeria. Thus, the main theoretical framework on which this study is anchored is the Keynessian Expenditure Model.

2.3.6 Implication of these Theories or Models on Policies.

In an economy, people's views on economic policy are often determined by the theoretical glasses the wear. Does a president, a senator or economist lean toward the classical or the depression Keynesian view? Once you know this, you can often predict accurately how he or she feels about major economic policy debates.

Examples are economists who tend toward the classical view will often be skeptical about the necessity for government to take steps to stabilize business cycles, they might think that any

government attempts to expand the economy will simply shift the AD curve up a steep AS curve, merely raising prices. Similarly, even in recession, a classical theorist worries about crowding out" of investment by government spending. That is, if the government spends more, then, because the economy will soon be near potential output, the increased government spending might merely displaced spending on private goods like investments.

A depression Keynesian will hold the opposite view. Because the economy is viewed as liable to sit for long periods with unemployment or high inflation, as such, a Keynesian will believe that government can manipulate the economy by taking policies to push the economy toward potential output, i.e. to the right or the left as shown in the model above, depending on whether the economy is in a depression or boom. Also such tunnel vision might conclude that higher government spending will not crowd out anything. Because the size of the economic pie will be larger when the AD curve has moved to the right as shown in the model above, government is merely taking a larger slice of a bigger pie. Government spending or tax cuts in recessions, in this view, create more output and thus stimulate more investments rather than crowding out capital formation.

On the other hand, economists who tend towards the Wagner's view will not consider government expenditure as a tool for economic manipulation, but instead as a behavioural variable which has only a passive role.

Which of these is the right view? None should be accepted without reservations. There are some validity in each, as well as strength and weakness. The key point to note is that many of the debates about economic policy arise because one participant has the classical model in his mind, while the other has the the depression Keynesian model or the Wagner hypothesis in his mind. The act of good macroeconomic judgement is to sense the strengths and weaknesses of each paradigm.

Turning to a detailed analysis of the Keynesian multiplier model, this approach is a major breakthrough in economic thought. This approach has not been left untouched by economists over the decades since the inception of the General Theory. A good theory is like a viable species, it evolves over time as the more durable features survive and the weaker strains are replaced by stronger ones.

Thus, the view that the AS curve is horizontal, widespread among early Keynesians, is no longer taken seriously. But the central themes, i.e of persistence of unemployment or boom, and of a role for government policy, continue to form the core of modern mainstream macroeconomics.

In line with the Keynesian view, government expenditure in majority of the countries all over the world has been on the increase. However, as mentioned earlier, this increase in government expenditure is seemingly not generating or reflecting significant increase in economic growth in some of these countries, especially the developing countries, including Nigeria. This concern has generated a lot of research works on the relationship between government expenditure and economic growth, but research findings in this area has not been in consensus.

2.4 Review of Related Empirical Studies

In this section, some of the recent research work carried out in this area of study will be reviewed.

2.4.1 Empirical Studies from Nigeria

Alimi (2014) examined the causal relationship between government expenditure and economic growth in a panel of three African countries: Nigeria, Ghana and South Africa during the period 1970 to 2012 using Fisher Panel Cointegration Test on a country-by-country basis. The panel cointegration results indicate a long run relationship between

economic growth and government expenditure only for Ghana as predicted by Wagner, thus suggesting that government expenditure is not an important factor on economic growth in the long run in Nigeria and South Africa. Furthermore, the result from the causality test shows that in the short run, there is a bi-directional causality that runs from government expenditure to economic growth and vice versa for Nigeria and South Africa. However, for Ghana, there is a uni-directional causality that runs from economic growth to government expenditure and there is no feed-back mechanism, both in the short and long run. This result suggests that Government expenditure enhances economic growth and vice-versa only in the short run for Nigeria and South Africa.

Emerenini and Okozie (2014) investigated the relationship between total government expenditure and economic growth in Nigeria. This study makes a modest contribution to the debates by empirically analyzing the relationship between Nigeria total government expenditure and its contribution to economic growth, using time series data from 1980 to 2012, obtained from the Central Bank of Nigeria Annual Report and Statement of Account and Federal Office of Statistics. It employs the Engle-Granger two step modelling (EGM) procedure to co-integration based on unrestricted Error Correction Model and Pair wise Granger Causality tests. From the analysis, the findings indicate that GDP and total government expenditure are cointegrated. The speed of adjustment to equilibrium is 44% within a year when the variables wander away from their equilibrium values. Based on the result of granger causality, the paper concludes that a very weak causality exist between the two variables used in this study. Therefore, the policy implication of these findings is that any reduction in total government expenditure would have a negative repercussion on economic growth in Nigeria.

Nwaeze, Abioku and Nwaeze (2014) examined the nature and impact of Federal Government Expenditure on Nigeria's economic growth for the period 1992 – 2011. Time series data for the twenty year period were sourced from secondary sources and Ordinary Least Square

(OLS) multiple regression technique was used to estimate the hypothesis formulated in line with the objectives of this study. Real Gross Domestic Product, proxy for economic growth is adopted as the dependent variable while Total Recurrent Expenditure and Total Capital Expenditure constitute the independent variables. The results of this study show that the Federal Government Expenditure has a positive and insignificant impact on the economic growth of Nigeria for the period under study.

Olulu, Erawasoke and Ukavwe (2014) investigated the empirical relationship between government expenditure and economic growth in Nigeria. Government expenditure was disaggregated into total expenditure, public debt expenditure, expenditure on health and government expenditure on Education. The ordinary least square (OLS) was applied to ascertain the long-run relationship between the variables, however, the Augmented Dickey Fuller (ADF) Unit Root test was used to examine the stationarity of the variables in the equation. Results of the test show that there is an inverse relationship between government expenditures on health and economic growth, while government expenditure on education is seen to be insufficient to cater for the sector in Nigeria. Thus, the paper concluded that optimum allocation of government expenditure could enhance economic growth in Nigeria.

Oni, Aninkan and Akinsauya (2014) investigated joint effects of capital and recurrent expenditures of government on the economic growth of Nigeria using the Ordinary Least Square (OLS) method for estimating multiple regression models covering the period of 1980-2011. The regression results show that both capital and recurrent expenditures impacted positively on economic growth during the period under review. The recurrent expenditure has a stronger and more accelerating effect on growth than capital expenditure. This is attributed to the fact that capital expenditure which is not meant for immediate consumption is more prone to misuse and embezzlement, and also could make it to be less growth enhancing.

Abayomi and Agbatogun (2013) examined the implications of government expenditure on the economic growth of the Nigerian economy over the period 1980 – 2009. Using cointegration, unit root test and error correction model, the study discovered that total capital expenditure, inflation rate, degree of openness and total recurrent expenditure are significant variables to improve economic growth in Nigeria.

Aigheyisi (2013) explored the relative impacts of federal capital and recurrent expenditures on the growth of the Nigerian economy. The data covered the period of 1980 – 2011. The empirical analysis begins with an investigation of the effect of total government expenditure (GOVEXP) on gross domestic product (GDP) using multiple linear regression analysis. The model was further disaggregated into capital expenditure (CAPTEXP) and recurrent expenditure (RECEXP) and their impacts on the GDP were investigated by exploiting the cointegration and error correction mechanism. The conitegration test result indicates the existence of a long-run relationship between the variables. The short-run impact of each explanatory variable on GDP was statistically insignificant.

Akinnibosun and Oyinlola (2013) examined the relationship between public expenditure and economic growth in Nigeria during the period of 1970-2009. A disaggregated public expenditure level was employed using the Gregory-Hansen structural breaks cointegration technique. The result confirms Wagner's law in two models in the long run. The result also shows that economic growth and development are the main objectives of government expenditure, especially investment in infrastructure and human resources all of which falls under social and community services.

Akpan and Abang (2013) investigated the impact of government spending on economic growth in Nigeria. Utilizing annual time series data from 1970 to 2010, the study applied OLS technique to a modified Ram (1986)'s two-sector production growth model on time series data from 1970 to 2010. In overall, the results show that at the aggregate level,

government spending in Nigeria is growth promoting, although the impact is very small and less than unity (0.16%). At the disaggregated level, only recurrent spending is significantly and positively related to economic growth, while the impact of capital spending is negative and insignificant.

Akpokere and Ighoreje (2013) investigated the effect of government expenditure on economic growth in Nigeria using a disaggregated approach. The data covered the period of 1997-2009. It observes that rising government expenditure has not translated to meaningful development as Nigeria is still being ranked among the world poorest countries. The estimation reveals that government total capital expenditure (TCAP), total recurrent expenditures (TREC), government expenditure on education (EDU) and power (POW) have negative effect on economic growth and are significant in explaining this relationship. On the contrary, rising government expenditure on transport and communication (TRACO), and health (HEA) results to an increase in economic growth.

Akonji and Abba (2013) investigated the linkage between the different components of government expenditure and real gross domestic product in Nigeria. Using conitegration and granger causality techniques, the result of the findings is rather mixed, the total capital expenditure and real gross domestic product support Wagner's law through the granger causality test showing a unidirectional causality. While total recurrent expenditure and real gross domestic product showed a bi-directional causality, but the link from total recurrent expenditure to real gross domestic product in stronger.

Aladejare (2013) examined the relationships and dynamic interactions between government capital and recurrent expenditures and economic growth in Nigeria over the period 1961 to 2010. Real Gross Domestic Product (RGDP) was used as a proxy for economic growth in the study. The analytical technique of Vector Error Correction Model and Granger Causality

were exploited. The findings show that, the Wagnerian and Rostow-Musgrave hypothesis are applicable to the relationship between the fiscal variables used in this study in Nigeria.

Aregbyen and Akpan (2013) examined the long-term determinants of marked expansion of government expenditure in Nigeria. Using annual time series data for a period of (1960 – 2010) and a single equation estimation approach, in a comprehensive specification. The result yields a variety of interesting and qualified evidence. Among other, the study found that inflow of foreign investment contributes to expansion of government recurrent expenditure at the expense of capital spending; debt servicing reduces all components of government expenditure; revenue is a major factor that accounts for long-term government growth; openness has a significant negative association over government expenditure; higher population (mostly in urban areas) leads to higher government spending: military regime is favourable to capital expenditure expansion in Nigeria than the civilian administration; election period is associated with higher government expenditure that would not otherwise be the case.

Arewa and Nwakahma (2013) investigated the long-run relationship between government expenditures and a set of macroeconomic variables (GDP, consumer price index and unemployment) using annual data collected from CBN statistical bulletin for a period of 1989 to 2011. It particularly adopts the Engle and Granger multivariate cointegration for its estimation procedure and discovers that there is long-run relationship between government expenditure and the specified macroeconomic variables. The findings finally show that most of the variables do not granger cause each other, but however, recurrent expenditure granger causes prices, in the same vain capital expenditure does granger causes unemployment.

Danmola, Olubukola and Wakile (2013) investigated the linkages between the different components of government expenditure and real gross domestic product in Nigeria. Using Granger causality, Error Correction Model and Cointegration techniques, the result of the

study are rather mixed. The total capital expenditure and real gross domestic product support Wagner's law through the granger causality test showing a unidirectional causality. While total recurrent expenditure and real gross domestic product are bi-directional causality, but the link from total recurrent expenditure to real gross domestic product is stronger.

Egbetunde and Fasanya (2013) analyzed the impact of public expenditure on economic growth in Nigeria during the period 1970 to 2010 making use of annual time series data. The study employs the bounds testing (ARDL) approach to examine the long run and short run relationships between public expenditure and economic growth in Nigeria. Findings indicate that the impact of total public spending on economic growth to be negative, recurrent expenditure however was found to have little significant positive impact on economic growth.

Ogundipe and Oluwatobi (2013) investigated the impact of both government recurrent and capital expenditure on economic growth in Nigeria, using an econometric analysis based on Johansen technique for the period of 1970-2009. The result shows that total government expenditure and the component of total government recurrent expenditure have negative and insignificant impact on economic growth. Further diagnosis test reveals that capital expenditure may likely indicate positive and significant impact on economic growth in the long-run.

Okoro (2013) investigated the impact of government spending on the economic growth in Nigeria. Employing the ordinary least square multiple regression analysis to estimate the model specified. Real Gross Domestic Product (RGDP) was adopted as the dependent variable while government capital expenditure (GCEXP) and government recurrent expenditure (GREXP) represents the independent variables. With the application of Granger Causality test, and Error Correction Mechanism, the result shows that there exists a long-run equilibrium relationship between government spending and economic growth in Nigeria.

Adewara and Oloni (2012) explored the relationship between the composition of public expenditure and economic growth in Nigeria. The data spanned between 1960 to 2008, using the vector autoregression model (VAR). The results show that government expenditure on health and agriculture are statistically significant, while Government Expenditure on water and education has a negative impact on economic growth in Nigeria for the period under review.

Bakare (2012) investigated the role of public expenditure on economic growth in Nigeria. The paper employed econometric method, using the ordinary least square multiple regression model for the analysis. The study found that the increase in government expenditure does not contribute to sustainable economic growth in Nigeria. The study conclude that the allocation of public expenditure does not fulfill the pareto optimal criterion. The study suggested the need for the government to review it's fiscal policy and adopt the "big push" strategy in public spending which is capable of helping the poor countries to break out of their poverty trap and meet the MDGs challenge. The "big push" strategy which is designed to set low income economies on a self sustainable growth path as core investments in infrastructure and human capital will enable poor people to join the global economy and establish the basis for private sector led diversified investment and economic growth.

Chiama, Torruam and Abur (2012) examined the impact of government expenditure on economic growth in Nigeria. The data covered the period of 1997 to 2006. The study employed Augmented Dickey – Fuller (ADF) Unit Root Test, Kwiakowski- Phillips - Schmist and Shin (KPSS) Test, Cointegration and Granger Causality Test. The results indicate that there exists a long run positive relationship between capital expenditure and economic growth. Stating that it takes some reasonable number of years for the growth objective to be manifested, and that government should therefore ensure that capital expenditure are properly managed to accelerate economic growth on the long run.

Ebiringa and Anyaogu (2012) evaluated the impact of government expenditure on economic growth in Nigeria. The data spanned between 1977 and 2011, using cochraneorcutt and error correction model. The results show that government capital expenditure on communication, defence and security, health and education have positive impact on economic growth, while government capital expenditure on transportation and agriculture impacted negatively on economic growth for the period under review.

Fasoranti (2012) examined the effects of government expenditures on infrastructure on the growth of the Nigerian economy. The data sourced majorly from the various issues of central bank statistical bulletin was analyzed with the aid of econometric methods. Data collected included government expenditure on education, environment and housing, health services, transport and communication, agriculture, security, and inflation rate. The study applied the unit root test on simple multiple regression model for the analysis. Results show a long run relationship between the growth of the economy and government expenditures on education, health services, environment and housing, however government expenditure on water resources, agricultures, security and inflation rate were not significant in the growth of the economy.

Inuwa (2012) investigated the relationship between government expenditure and economic growth in Nigeria. The data covered the period of 1961 to 2010. The study employed the Bound Test approach to co-integration based on unrestricted Error Correction Model and Pair Wise Granger Causality Test. The results show that government capital expenditure has a significant positive relationship with economic growth, while government recurrent expenditure seems to have no causal relationship with economic growth. Stating that the policy implication of this findings is that any reduction in capital expenditure would have a negative repercussion on economic growth in Nigeria.

Okafor, Onwumere and Ibe (2012) examined the impact of government expenditure (disaggregated into recurrent and capital expenditure) on economic growth from 1987 to 2010. Three variable multiple regression model was adopted. The result emanating from this study reveals that while recurrent government expenditure had positive and non-significant impact on economic growth, capital expenditure had negative and non-significant impact on economic growth thus re-echoing the need for increase and encouragement of private sector investment.

Sevitenyi (2012) analyzed the relationship and the direction of causality between government expenditure and economic growth in Nigeria, using annual data from 1961-2009. The variables at the aggregate level are total government expenditure and economic growth. The analysis is further disaggregated to include recurrent expenditure, capital expenditure, expenditures on administration, social and community services, economic services, and transfers as independent variables. The econometric methodology employed is the cointegration and the Toda-Yamamoto Granger Causality test. First from the Augmented Dickey-Fuller (ADF) the study finds that there is a unidirectional causality running from total government expenditure to economic growth, which supports the Keynesian hypothesis. Moreover, at the disaggregate level, the results show that all the variables, except total recurrent expenditure, impacted positively on economic growth for the period under review. On the whole this study empirically does not support the existence of Wagner's law both at the aggregate and the disaggregate levels in Nigeria.

Suleiman (2012) examined empirically the relationship between government expenditures and economic growth in Nigerian. The data covered the period of 1979 – 2008. The analysis tested the relevance of the Wagner's law, the Keynesian theory, Friedman, Peacock and Wiseman hypotheses in Nigeria. The study tested for the stationarity properties of the time series data, using the Augmented Dickey-Fuller (ADF) Unit Root test. The VAR-based Error Correction Model is used to test for causality. The results show that growths in both real

gross domestic and government revenue causes growth in government expenditure. The implication is that government expenditure is not employed as a fiscal instrument and the revenue growth drives the government expenditure for the period under review. This implies that the Wagners's law is more relevant in the case of Nigeria. The study observed that the volatility in oil-driven revenue profile of Nigeria requires public expenditure management reforms and the need to check the productiveness of government expenditure and diversify the revenue drive.

Tawose (2012) examined the effect of public expenditure on industrial sector productivity in Nigeria. Ordinary least square multiple regression was adopted to carry out the analysis. Index of industrial production (IIP) serves as proxy for industrial Productivity, while Total Government Expenditure (GEXP), Government Expenditure on administration (GADM), Government Expenditure on Economic Services (GECS), Government Expenditure on Social and Community Services (GSCS) and Government Expenditure on Transfer (GTRS) were proxies for government expenditure. The regression results show that both government expenditure on administration and government expenditure on economic services have positive relationships with industrial productivity. This implies that when GADM and GECS are increasing, lIP also increases. The impact of each of the independent variables either negative or positive on industrial productivity is insignificant.

Amassoma, Nwosa and Ajisife (2011) examined the relationship between the components of government expenditure and economic growth in Nigeria, using error correction modelling, and data spanning from 1970 to 2010. The results show that government capital expenditure on agriculture is statistically significant while government capital expenditure on education, health, transport and communication are not statistically significant.

Loto (2011) investigated the impact of government expenditure on economic growth in Nigeria, over the period of 1980 - 2008, with particular focus on sectoral expenditures. Five

key sectors were chosen, these include: security, health, education, agriculture and transportation and communication. The variables were tested for stationarity and cointegration analysis was also carried out including error-correction test. The result shows that in the short-run expenditure on agriculture was found to be negatively related to economic growth. The impact of education, though also negative was not significant. The impact of expenditure on health was found to be positively related to economic growth. Though expenditures on national security, transportation and communication were positively related to economic growth for the period under review, the impacts were not statistically significant. It is possible that in the long-run, expenditure on education could be positive if brain drain would be checked.

Muritala and Adebayo (2011) evaluated the relationship between government expenditure and economic growth in Nigeria. The data spanned between 1970 to 2008. Using econometrics model with Ordinary Least Square (OLS) technique, the results show that there is a positive relationship between both capital and recurrent expenditures and economic growth. Contending that the major challenge in Nigeria is for the government to promote efficiency in the allocation of development resources.

Nworji, etal. (2011) examined the effect of public expenditure on economic growth in Nigeria for the period of 1970 – 2009. The statistical tool of analysis is the OLS multiple regression model specified on the probable causal relationship between government expenditure and economic growth. Analysis was based on data extracted from the Statistical Bulletin of the Central Bank of Nigeria. Results of the analysis show that capital and recurrent expenditure on economic services had insignificant negative effect on economic growth during the period under review. Also, capital expenditure on transfers had insignificant positive effect on economic growth. But capital and recurrent expenditures on social and community services and recurrent expenditure on transfers had significant positive effect on economic growth.

Adesoye, Maku and Atanda (2010) examined the link between government spending and economic growth in Nigeria over the last three decades (1977- 2006) using time series data to analyse the Ram (1986) model. Three variants of Ram (1986) model were developed to regress the real GDP on government investments, human capital investment, private investment and consumption spending at absolute levels, and regressing the growth rate of real output of the explanatory variables as a share of the real GDP, in other to capture the precise link between public investment spending and economic growth in Nigeria based on different levels. The empirical results show that private and public investments have insignificant effect on economic growth during the period under review.

Olopade and Olopade (2010) investigated the impact of government expenditure on economic growth in Nigeria. The analytical framework is based on economic models, statistical methods encompassing trends analysis and simple regression. This study finds no signified relationship between most of the components of expenditure and economic growth and development. The estimated results were mixed in nature, in particular some of the variables were weakly significant as a result of none inclusion of effect of environmental impacts. However it provided important clues to the future direction of research.

Usman and Nurudeen (2010) examined the impact of government expenditure on economic growth in Nigeria. The data covered the period of 1970- 2008. Using Unit Root Test and the Odinary Least Square (OLS) technique, the results show that government total capital expenditure and recurrent expenditure, and government expenditure on education have negative impact on economic growth. While government expenditure on health, transport and communication have positive impact on economic growth. The study further reveals that encouragement and increased funding of the anti- corruption agencies in order to tackle high level corruption in public offices might effect changes in the performance of public expenditure in Nigeria.

2.4.2 Empirical Studies from other Countries

Alshahrant and Alsadiq (2014) examined the effect of government expenditures on economic growth in Saudi Arabia. Using econometric techniques to estimate the short-run and long-run effects of government expenditures on economic growth. The study employed annual data over the period of 1969 – 2010. Findings indicate that private domestic and public investments, as well as health care expenditure, stimulate economic growth in the long-run, openness to trade and spending in the housing sector can also boost short-run production.

Al-Shatti (2014) examined the impact of public expenditures on economic growth in Jordan. The data covered the period of 1993 – 2013. The focus of the paper was to determine specifically the contribution of government capital and recurrent expenditure on Education, Health, Economic Affairs, Housing and community Utilities as a percent of the total public expenditures, and then evaluating the impact of each of them on economic growth in Jordan. Two mathematical models were designed to measure this impact, the first one measures the impact of current functional expenditures, and the second model measures the impact of capital functional expenditures on economic growth in Jordan. The empirical result shows that the impact of capital and recurrent expenditures on education has failed to enhance economic growth, and that it is due to the high cost of education, especially higher education in the private sector in Jordan, as well as the growing rate of unemployment, and that expenditures on health and economic affairs are encouraging, they had positive impact on economic growth for the period under review.

Chipaumire, Ngirande, Mangena and Yewukai (2014) investigated the validity of the Keynesian macroeconomic framework and the classical perspective of a long run relationship and causality between government expenditure and economic growth in South Africa using quarterly data from 1990-2010. The ADF (Augmented-Dickey Fuller) and the Philips-Perron tests techniques were engaged to test for stationarity. The results show that certainly a long run relationship exists between government spending and economic growth in South Africa.

Lina (2014) examined the relationship between government expenditure and private investment in the case of small open economies. In order to assess the relationship between government expenditure and private investment in this research, cross-correlations and Granger causality tests were applied using data of Bulgaria. Estonia, Latvia, Lithuania and Slovenia covering the period of 1996 – 2012. The results show that impact of increased government expenditure on private investment is very weak but negative, impact of increased government expenditure on private investment dominates, except in the case of Bulgaria; whereas the impact of increased private investment on government expenditure is very significant in the analyzed countries.

Majid and Elahe (2014) analysed the causal relationship between government expenditure and economic growth for two panels of twenty Asian countries during 1970 to 2010 periods. The study employed cointegration and Engle and Granger causality test. The results of Panel cointegration support the existence of long-run relationship only for developing panel. Furthermore, the empirical growth in the short-run for advanced and newly industrialized countries is unidirectional, and bidirectional causality in the long-run for developing panel.

Abdinasir (2013) examined the relationship between public expenditure and economic growth in Kenya using time series data covering the period 1980 – 2010. Four key sectors were selected for this study, namely: health, education, agriculture and infrastructure. The study employed correlational research design, however, in order to avoid spurious estimates on the part of the time series data, unit root test was conducted to test for stationarity, using Augmented Dickey-Fuller (ADF) technique. The results reveal that public spending on agriculture and infrastructure promote economic growth whereas public expenditure on health and education were found to be negatively related to economic growth.

Carter, Craigwell and Lowe (2013) investigated the relationship between government expenditure and economic growth in Barbados, using a disaggregated approach . Both the Dynamic Ordinary Least Squares and the Unrestricted Error Correction Model were employed to analyse the time series data spanning from 1976 – 2011. Generally, the findings suggest that total government spending from 1976–2011 produces a drag on economic growth, particularly in the short-run, with a much smaller impact over time. More specifically, the results indicate that while outlays on health and social security have little influences on per capita income: government expenditure on education typically has a significant and negative impact on economic growth, both in the long and short runs. In addition, reallocations of government spending from one component to another may have growth-enhancing effects without having to change the level of government spending.

Chairil, Sinaga and Febrianti (2013) examined the impact of government expenditure on economic growth in Indonesia. The study was focused on the relationship between military expenditure and economic growth, in empirically testing the causal relationship between the two variables the Augmented Sollow Growth Model was used. The result shows that Indonesia's military expenditure has positive effect on the country's economic growth, which is most possibly caused by development of human capital as effect of military training expenditure.

Chung, etal. (2013) investigated the relationship between government expenditure and economic growth in Malaysia from 1970 to 2012. This study employed only government developmental expenditure instead of both government expenditure on consumption inclusive. This study employs OLS regression for the empirical analysis. This study found that there is a significant and positive relationship between government expenditure and economic growth. The total government spending towards social and economic development also show a positive relationship between these spending and economic growth. The test was further disaggregated to include transport, defence and security, education , and general

administration. The results show that only transport and education sector are statistically and positively significant on the economic growth of Malesia.

Ebaidalla (2013) investigated the nature and direction of causality between government expenditure and national income in Sudan, using Granger causality test and Error Correction Model (ECM) for the period 1970-2008. The result of cointegration test shows a long-run relationship between government expenditure and national income in Sudan. The causality test indicates that the direction of causality runs from government expenditure to national income, both in the short and long-run. Thus, the results support the Keynesian proposition, which states that public spending is an important exogenous factor for stimulation of national income. Moreover, the study concludes that fiscal policy in Sudan plays a vital role in stabilizing the economy and achieving economic goals.

Gadinabokao and Daw (2013) empirically examined the relationship between government expenditure and economic growth in South Africa for the period of 1980 to 2011. Econometric techniques were applied to test the hypothesis that an increase in government expenditure has positive impact on economic growth. The study examines the causal relationship that exists between government spending and economic growth in South Africa using OLS regression techniques. Secondary data obtained from the SARB is used for data analysis. The results confirm a long-run positive relationship existing between the two variables under study, and further shows that gross capital formation granger causes economic growth.

Musaba, Chilonda and Matchaya (2013) examined the impact of government sectoral expenditure on economic growth in Malawi. Using time series data from 1980 to 2007, cointegration analysis in the context of an error correction model was employed to estimate the growth effects of government expenditure in agriculture, education, health, defence, social protection, transport and communication. The results show that there is no significant

relationship between government sectoral expenditure and economic growth in the short run. However, the results show that there is a long run positive and significant relationship between economic growth and expenditure on agriculture and defence. The expenditure on education, health, social protection, transportation and communication were negatively related to economic growth.

Muthui, Kosimbei, Malingi and Thuku (2013) examined the impact of public expenditure composition on economic growth in Kenya, the data spanned between the period of 1964 to 2011. The specific objectives of the study were to investigate the impact of government expenditure on education, infrastructure, heath, defence, public order and security on economic growth in Kenya. This study conducted Unit Root test to ensure stationarity of the data, before using Vector Error Correction Model to estimate the data. The survey shows that though government expenditure on education is positively related to economic growth, it does not significantly spur the change on economic growth. While an increased expenditure on improving health might be justified purely on the ground of its impact on labour productivity. This only supports the case of investments in health as a form of human capital development.

Sprinivasan (2013) investigated the causal nexus between public expenditure and economic growth in India using cointegration approach and error correction model. The analysis was carried out over the period 1973 to 2012. The Cointegration test result confirms the existence of long-run equilibrium relationship between public expenditure and economic growth in India. The empirical results based on the error-correction model estimate indicate one-way causality runs from economic growth to public expenditure in the short and the long-run, supporting the Wagner's law of public expenditure.

Thamae (2013) analysed the impact of government expenditure on economic growth in Lesotho, the data covered the period of 1980-2010, using multivariate cointegration

techniques for the analysis. The results indicate that government spending is positively related to income and population growth while negatively related to tax share in the long-run. The latter supports the idea of fiscal illusion caused by budget deficits, which reduces the perceived cost of public spending to taxpayers. The role of internal and external shocks on government spending is also investigated in this study but such factors are found to be less important in determining the growth of government expenditure in Lesotho.

Abdulla (2012) studied the relationship between government expenditure and economic growth in the Qatar's economy. Annual data for the period 1980 – 2011 were used, and a time – series econometrics method of unit root test, cointegration and Granger causality were applied to investigate the direction of causality between government expenditure and economic growth. The results reveal that economic growth and government expenditure are integrated in order one, implying a long-run relationship between economic growth and government expenditure in Qatar's economy. It is also found that economic growth Granger cause government expenditure. This suggests that Wagner's law is found to be adequate in the case of Qatar's economy for the period under review.

Basudev (2012) examined the impact of government expenditure on economic growth in Nepal. The result shows that due to political instability and weak governance, government expenditure has not shown significant impact on the level of economic growth and development in Nepal. The study suggests increasing the spending capacity of government and regular monitoring in expenditure tracking, and ensuring effective use of government investments, avoiding corruption and misuse of public investments.

Bataineh (2012) investigated the impact of government expenditure on economic growth in Jordan , for the period of 1990 to 2010, using cointegration and it's implied error correction model. The results show that government capital expenditure on the aggregate level has a positive impact on economic growth which is compatible with the Keynesian theory.

Ferry (2012) investigated the effect of public sector expenditure on economic growth and rural poverty in Indonesia. The data were sourced from 32 provinces, covering the period of 2006 to 2008. Using simultaneous equations model, the result reveals that government spending on education and health sectors have a significant effect in reducing the number of rural poor through the outcome of school enrolment, illiteracy, infant mortality and life expectancy. In contrast, expenditure on infrastructure had no significant effect both in accelerating the growth of the economy and in reducing poverty level generally.

Kari and Allan (2012) undertook a re-examination of the empirical validity of Wagner's Law in selected Caribbean countries. Utilising advanced econometric techniques that incorporates non-linearity in testing causality; and exploring the empirical validity of the ratchet effect. The study finds no empirical support for Wagner's Law, however, the ratchet hypothesis is validated.

Magazinno (2012) analyzed the relationship between public spending and economic growth in Italy for the period of 1990-2010. The study employed a disaggregated approach. Ten items of public spending according to the COFOG functional classification were covered by the model. The cointegration tests reveal a long-run relationship between economic growth and three spending items. Moreover, Granger causality test results show evidence in favour of wagner's Law in four cases, while a bi-directional flow is found for two spending items. The Keynesian theory is not supported by the empirical findings.

Mehdi and Shoorekchali (2012) examined the impact of government spending on economic growth using Smooth Transition Regression (STR) and annual data for the period of 1960-2009 to investigate nonlinear government size effects (Government consumption spending as a percentage of GDP) on economic growth in Italy. Results confirmed nonlinear effects of government size on economic growth, government size has had a significant negative effect

on economic growth, value of government size is determined to be 20.608 percent. In addition, the results show that investment and population growth have a significant positive effect on economic growth in Italy for the period under review.

Metehan, Cevil and Merve (2012) analyzed the relationship between public expenditure and economic growth in Turkey. To that end, public expenditure and economic growth data for Turkey were examined by ADF and PP tests using data for the period of 1980 – 2010. The results of variance decomposition analysis and impulse-response were interpreted by establishing a VAR model. In Granger causality test, one-way causality was found from recurrent, transfer, and total expenditures to economic growth in Turkey.

Mohsen, Bagher and Ahmad (2012) investigated how composition of government spending affects employment and or economic growth in MENA countries. The data spanned from 2001 to 2009. Using multiple regression analysis, the results indicate that government spending on goods and services, health and transportation stimulate employment and or economic growth and spending on military and education reduces employment as well as economic growth.

Mohamed (2012) examined the relationship between government expenditure and economic growth in Sudan. The data spanned between the period of 1970 to 2010. The methodology used is cointegration, causality and error correction model (ECM). The results indicate that there is positive relationship between government expenditure and economic growth in the Jordan economy. However, on the causality relationship, the findings supported the view that the level of government expenditure is determined by the rate of economic growth.

Mudeki and Masaviru (2012) investigated the impact of government expenditure on economic growth in Kenya, with data spanning from 1972 – 2008. Using ordinary least squares (OLS) technique, after differencing the data for stationarity. The findings show that government expenditure on education, transport and communication have a positive

relationship with economic growth, on the other hand, government expenditure on health and defence are not statistically significant. While government expenditure on agriculture has a negative impact on economic growth.

Safdari and Ramzan (2012) evaluated the asymmetric effects of government spending on economic growth in the Iran economy. The data covers 1979 to 2006. The study used unit root test and auto regressive distributed lag model to analyze the data. Findings show that the relationships between the performance of asymmetric effects of government spending and economic growth are informative.

Saiyed (2012) investigated the causal relationship between Public Expenditure and Economic Growth in India, during the Post Economic Reforms period from 1992 to 2012. First, impact of Economic Growth on Public Expenditure is investigated and then influence of Public Expenditure on Economic Growth is examined also. In this study, cross-sectional relationship is estimated between year-wise National Income (GDP) and Public Expenditure in India. Cross-sectional analysis of data for 21 years during 1992 to 2012 shows significant bi-directional causal relationship between year-wise number of National Income (GDP) and Public Expenditure.

Tayeh and Mustafa (2012) analyzed the factors that affect total government expenditures. The study employed econometrics' methodology to assess the nature of the relationship between Jordanian public spending and its determinants. The main result of this research is that population, unemployment and inflation rates are significantly related to public expenditures.

Tofik (2012) analysed the role of Ethioia's government expenditure on economic growth and the importance that ODA has played in financing government spending. The study employed both descriptive and econometric analyses. In the econometric analysis, Ram's (1986) model

was adopted to scrutinize the impact of different composition of public spending on economic growth. The study revealed that public spending on physical investment and human capital development have positive contributions on economic growth while spending on consumption affects growth negatively.

Alina and Ali (2011) evaluated the effect of public spending on economic growth, using countries in Asia, Latin America and Africa as a case study. The results from the samples imply that in most of the countries in these global regions, public expenditure has a positive relationship with national income and or economic growth in the short or long run. Various types of government spending have differential impacts on economic growth, implying greater potential to improve efficiency of government spending by reallocation among sectors. Asia's investments in agriculture, education and defence had positive growth-promoting effects. However, all types of government spending except health were statistically insignificant in Latin America. Structural adjustment programs promoted growth in Asia and Latin America, but not in Africa. Growth in agricultural production is most crucial for poverty alleviation in rural areas. Agricultural spending, irrigation, education, and roads all contributed strongly to this growth. Disaggregating total agricultural expenditures into research and non- research spending, the result reveals that research had a much larger impact on productivity than non- research spending.

Colombier (2011) estimated the impact of the composition of public expenditures on economic growth in the Swiss economy, for the period of 1998-2009, using robust cointegration approach. The main finding is that public expenditures on transport infrastructure, education and administration foster economic growth in the Swiss economy for the period under review.

Dandan (2011) investigated the impact of public expenditures on economic growth in Jordan using a time series data for the period of 1990 - 2006. The Ordinary Least Square regression

model was employed. The result shows that government expenditure at the aggregate level has positive impact on economic growth which is also compatible with the Keynesian's theory.

Mohammed, Maleki and Gashti (2011) examined the effect of government expenditure composition on the economic growth and development of economic cooperation organization countries (ECO) for the period of 1995-2009. In this article, more emphasis was on three types of public expenditure, these include: expenditures on health, education and defence. The methods used are the dynamic panel data method and the generalized method of moments (GMM). The findings show that government expenditure on health, has statistically and Significantly negative effect on economic growth, while government expenditure on education and defence have statistically and significantly positive effect on the economic growth and development of ECO countries. The Sargan test for accuracy of applied moments, shows an optimum accuracy of the method used.

Nabila and Parvez (2011) investigated empirically the effect of government spending in social sectors on economic growth during the period 1974 – 2008 in Pakistan. The results of the study reveal the existence of positive relationship between government expenditure on human capital, economic services, and community services and economic growth. While government expenditure on law and order and subsidies appear to be negatively related to economic growth in Pakistan for the period under review.

Tang and Lau (2011) investigated the behaviour of disaggregated pubic expenditures data and national income in Malaysia. This study covers the sample period of annual data from 1960 to 2007. The Bartlett – corrected trace tests proposed by Johansen (2002) were used to ascertain the presence of long run equilibrium relationship between public expenditures and national income. The results show one cointegrating vector for each specification of public expenditures. The relatively new MWALD test indicates a strong unidirectional causal effect

runs from national income to public expenditures in Malaysia. While a bidirectional causality evidence exists between public expenditure on health and national income. The result implies that, it is not a wise strategy to solely depend on fiscal policy for long-term economic growth in Malaysia.

Jamshaid, Asim and Wasif (2010) examined the nature and the direction of causality in Pakistan between public expenditure and national income along with various selected components of public expenditure by applying Toda-Yamamoto causality test to Pakistan for the period of 1971 to 2006. This study finds that there is a unidirectional causality running from economic growth to government expenditure, which supports the Wagner's Law. Moreover, at disaggregate level, results show that economic growth only causes administrative expenditure while no causality found in development expenditures, debt servicing and defence expenditures. On the whole this empirical result does not support the existence of Keynesian hypothesis both at aggregate and disaggregate levels in Pakistan.

Mehmood and Sadiq (2010) examined the long run as well as the short run relationship between the fiscal deficits, which is outcome of high government expenditure over the level of tax collection, and poverty in Pakistan. The results reveal a negative relationship between government expenditure and poverty, based on time series data from 1976 – 2010. The short run and long run relationships between poverty and other variables are identified by ECM model and Johansen Cointegration test respectively. The results show that there exist short run as well as long run relationship between poverty and government expenditure.

Sahoo, Dash and Nataraj (2010) investigated the role of government expenditure on infrastructure in promoting economic growth in China for the period 1975 to 2007. Overall, the results reveal that government expenditures on infrastructural stock, labour force, public and private investments have played an important role in economic growth in China. More importantly, the results show that infrastructural development in China has significant

positive contribution to economic growth than both private and public investments. Further, there is unidirectional causality from infrastructure development to output growth justifying China's high spending on infrastructural development since the early nineties. The experience from China suggests that it is necessary to design an economic policy that improves the physical infrastructure as well as human capital formation for sustainable economic growth in developing countries.

Stratmann and Okolski (2010) Investigated the relationship between government expenditure and economic growth in USA. The study employed a body of empirical evidence over time in it's analysis. Findings show that government spending, even in a time of crisis, is not an automatic boost for an economy's growth. In practice, government outlays designed to stimulate the economy may fall short of that goal. Such outcomes have serious consequences as the United States embarks on a massive government spending initiative.

Toban (2010) investigated the relationship between government spending and economic growth in the Turkish economy using bounds testing approach and MWALD Granger causality test. The data covered the sample period from 1987:Q1 to 2006:Q4. The analysis was disaggregated into investment and consumption expenditure. It is found that total government spending, and the share of government investment expenditure to GDP have negative impacts on the growth of real per capita GDP in the long run. Nevertheless, there is no evidence of co-integrating relationship between government consumption spending to GDP ratio and per capita output growth. The MWALD causality test indicates strong bi-directional causality between the total government spending and economic growth. Whereas no statistically significant relationship between the share of the government consumption spending to GDP and economic growth, a unidirectional causality was found running from the per capita output growth to the ratio of the government investment expenditure to GDP.

Alexious (2009) examined the relationship between government spending and economic growth. For two different panel data methodologies applied to seven transition economies in the South Eastern Europe (SEE), the evidence generated indicate that four out of the five variables used in the estimation i.e. government spending on capital formation, development assistance, private investment and trade-openness all have positive and significant effect on economic growth. Population growth in contrast, is found to be statistically insignificant.

Federico, Guherme and Ricardo (2009) analyzed theoretically and empirically the impact of government expenditure on infrastructures on economic growth in Brazil for the period of 1986 to 2003. The hypothesis is that public expenditure on transport infrastructures are central to foster sustainable growth in Brazil. Theoretical and empirical literature highlights the fact that this type of investment fosters economic growth and the multiplier by means of its effects on productivity. By using a panel data model to Brazilian states, conclusions highlight the fact that infrastructure investments are one of the main demands to economic growth in Brazil.

Andros and Sugata (2008) investigated the impact of government expenditure on economic growth, in a heterogeneous panel for 15 developing countries, using the GMM techniques. The results show that countries with substantial government expenditure experience strong positive effects on economic growth, which vary considerably across the nations.

2.5 Summary of Literature

Obviously available literature provides a comprehensive view of different scholars about the relationship between government expenditure and the growth of an economy. However, research findings in this area of study has not been in consensus. For instance, the results of Akpokere and Ighoreje (2013) as well as Alimi (2014) shown a negative relationship between government expenditure and economic growth in Nigeria. While the result of Emerenini and Okozie (2014) as well as Oni, Aninkan and Akinsanya (2014) shown a positive relationship

between government expenditure and economic growth in Nigeria. It is the opinion of this researcher that the differences in the results of most of these studies might be due to differences in methodology employed.

Some of the studies such as Fasoranti (2012) and Tawose (2012) employed methodologies which are not very effective in the estimation of time series multivariate models. For instance, the use of the Ordinary Least Square (OLS) and some versions of Cointegration based techniques such as the Engle and Granger Cointegration techniques, and similar others, have proved to be inadequate or ineffective in estimation of time series multivariate models. (Johansen,1995). These are some of the lapses which this study intends to improve upon.

Some of the most relevant recent indigenous research in this area of study include: Emerenini (2014); Olulu, Erawasoke and Ukavwe (2014); Oni, Aninkan and Akinsanya (2014); Aigheyisi (2013); Aladejare (2013); Arewa and Nwakahona (2013); Oyinlola and Akinnibosun (2013); Abayomi and Agbatogun (2013); Aigbeyisi (2013); Akonji and Abba (2013); Modebe, etal (2012); Fasorante (2012); Tawose (2012), Nworji, etal. (2011) Usman and Nurudeen, (2010);. These studies though, are commendable but suffered one disadvantages or the other. For instance, the works of Emerenini (2014), Aigheyisi (2013), Aladejare (2013), Arewa and Nwakahma (2013), Oyinlola and Akinnibosun (2013), Abayomi and Agbatogun (2013), Aigbeyisi (2013), Akonji and Abba (2013), and Modebe, etal (2012) etc concentrated on just capital and recurrent expenditure. While the works of Olulu, Erawasoke and Ukavwe (2014), Oni, Aninkan and Akinsanya (2014), Fasoranti (2012), Tawose (2012), Nworji,etal.(2011), Usman and Nurudeen 2010), etc, used the Ordinary Least Square (OLS) technique, this is not very appropriate for the estimation of models of this nature, as it has a high probability of producing or allowing spurious correlation.

The relevance of the studies reviewed to Nigeria is limited due to the neglect of some of the key subsectors of the economy such as government sectoral expenditure on solid minerals and government sectoral expenditure on oil refineries by previous researchers.

Given, the limitations sited above, this study intends to fill these gaps by employing a model that will appropriately capture some of the neglected components of government sectoral expenditure. Thus, the sectors to be captured in this study include: Education, Electricity Generation, Health, Oil Refineries, and Solid Minerals. The inclusion of Oil Refineries and Solid Minerals in the model is an attempt to fill up a major gap in existing literature on this topic, especially in Nigeria, because, despite the importance of these sectors, they have been ignored or neglected by previous studies.

The statistical tool of analysis to be used are the Augmented Dickey-Fuller (ADF) Unit Root Test, the Johansen Cointegration and it implied Error Correction Model (ECM) which is presently the most powerful and reliable version of Cointegration based techniques. The data to be employed will cover the period of 1980 to 2013.

CHAPTER THREE
RESEARCH METHODOLOGY

3.1 Research Design

This chapter contains research method used to examine the effect of government sectoral expenditure on the growth of the Nigerian economy (1980 – 2013). Major subjects here include research design, nature and sources of data, model specification and estimation techniques. The purpose is to create a better understanding of the research report.

The aim of a research design is to provide a framework for a study. It serves as a compass or guide to the researcher in generating and estimating data, thereby enhancing identification and understanding of the relationship between dependent and independent variables. This study is a time serial ex-post-facto analysis. The data cover the periods of 1980 to 2013.

3.2. Nature and Sources of Data

The data used for this study are secondary in nature and were collected mainly from the various issues of the World Bank Development Indicators for Nigeria for the period under review. The data consists of the value of the Gross Domestic Products (GDP), which is the dependent variable and the values of some major components of government expenditure namely: Solid Minerals, Oil Refineries, Health, Electricity Generation, and Education which are the independent variables.

3.3 Model Specification

The model estimated in this study is hereby specified functionally as follow:

GRGDP = f(GLSM, GEOR, GEHE, GEEG, GEED)

This could be stated linearly as follow:

$$\mathbf{GRGDP = b_0 + b_1\ GSLM + b_2 GE0R + b_3 GEHE + b_4 GEEG + b_5 GEED}$$

$$b_1, b_2, b_3, b_4, b_5, > 0$$

Where:

GSLM = Government Expenditure on Solid Minerals

GEOR = Government Expenditure on Oil Refineries

GEHE = Government Expenditure on Health

GEEG = Government Expenditure on Electricity Generation

GEED = Government Expenditure on Education.

GRGDP = Growth in Real Gross Domestic Products

Ut = Error term

3.4 Estimation Techniques

The parameters of the coefficients for this study were estimated via the Vector Error Correction Model (VECM). The VECM approach was adopted because of the spuriousness in conventional econometric methodology, such as the Ordinary Least Square (OLS) techniques.

Before the VECM estimate, preliminary tests were carried out in order to validate some of the properties of time series data. The Augmented Dickey-Fuller (ADF) test was used to determine the time series properties (for the presence of a unit root) of the stochastic variables. A variable is said to contain a unit root of it is non-stationary. The use of data characterized by unit roots may lead to serious error in statistical inference (Gujarrati 2003). Moreover, the Johansen procedure was used to test for co-integration in the variable. This technique was adopted not because it is Vector Auto-regressive (VAR) based but because it performs better in multivariate functions.

The VECM methodology is a variant of VAR approach that regards all variables as endogenous, where each endogenous variable is explained by its lagged values and the lagged values of all other endogenous variables in the model in a series of simultaneous econometric equations.

3.4.1 Testing for Stationarity Unit Root Test

The importance of this test cannot be overemphasized since the data to be used in the estimation are time-series data. In order not to run a spurious regression, it is worthwhile to carry out a stationary test to make sure that all the variables are mean reverting, that is, they have constant mean, constant variance and constant covariance. In other words, that they are stationary. The Augmented Dickey-Fuller (ADF) test was used for this analysis since it adjusts for serial correlation.

Decision rule: If the ADF test statistic is greater than the MacKinnon critical value at 5% (all in absolute term), the variable is said to be stationary. Otherwise it is non stationary.

3.4.2 Cointegration Test

Econometrically speaking, two variables will be cointegrated if they have a long-term, or equilibrium relationship between them. Cointegration can be thought of as a pre-test to avoid spurious regressions situations (Granger, 1977). As recommended by Gujarati (2003), the ADF test statistic was employed on the residual.

Decision Rule: If the ADF test statistic is greater than the critical value at 5%, then the variables are cointegrated (values are checked in absolute term).

3.4.3 Overparameterized and Parsimonious Representation

A useful and more flexible form of adjustment has been found in error correction modelling, this technique of error adjustment involves estimating an over-parameterized model with a good number of lags for both dependent and independent variables. The overparametrized equation will then reduce the equation to parsimonious representation in order to know

exactly the independent variables that explain the changes in the dependent variable. It is the parsimonious representation that is then explained for policy decision making.

3.5 Global Statistics Checks

The global statistics or diagnostic checks are used to test the stochastic properties of the model. These include, Breusch Serial Correlation Langrager Multiplier (LM) test, Jargue Bera Normality test, Cusum Stability test, etc.

Breusch Serial Correlation Langrager Multiplier (LM) test

Since the Durbin Watson (DW) test is less reliable when lags of variables are used, the Breusch Godfrey Serial Correlation Langrager Multiplier (LM) test becomes significant in analysing the presence or absence of serial correlation in the model.

Decision Rule: If probability is greater than five (5) percent (P>0.05) we conclude that there is no serial correlation in the model.

Jargue Bera Normality Test

This is used to test for residual normality, that is, to assess whether the residuals are normally distributed or not.

Decision Rule: If probability is greater than five percent (P>0.05) we conclude that the residuals are normally distributed and vice versa.

Cusum and Cusumq Stability Test

This is used to test for the stability of the residuals. In this respect, the cumulative sum of Recursive Residuals (CUSUM) and the cumulative sum of squares (CUSUMQ) of Recursive Residuals are used to assess residual stability.

Decision Rule: If the CUSUM and CUMSUMQ lines are between the five percent (5%) lines, it indicates that the stability of the residuals.

Test for Multicolinearity

This means the existence of an exact linear relationship among the explanatory variables of a regression model. It is used to determine whether there is a correlation among the variables.

Decision Rule: From the rule of Thumb, if correlation coefficient is greater 0.8, we conclude that there is multicolinearity but if the coefficient is less than 0.8 there is no multicolinearity. Also, reject the null hypothesis (H_0), if any two variables in the model are in excess of 0.8 or even up to 0.8. Otherwise we accept.

Test for Heteroscedasticity

The essence of this test is to see whether the error variance of each observation is constant or not. Non-constant variance can cause the estimated model to yield a biased result. White's General Heteroscedasticity test would be adopted for this purpose.

Decision Rule: We reject H_0 if $F_{cal} > F_{tab}$ at 5% critical value. Or alternatively, we reject H_0 (of constant variance i.e., homoskedasticity) if computed F-statistic is significant. Otherwise accept at 5% level of significance.

The t-statistic: This is used to determine the reliability/statistical significance of each variable coefficient. Here, the absolute t-value of each coefficient is compared with a tabular t-value and if greater than a tabular t-value, such variable possessing the coefficient is accepted as statistically significant and fit to be used for inferences and possibly for forecasting.

The Coefficient of Determination (R^2) and Adjusted R^2

The square of the coefficient of determination R^2 or the measure of goodness of fit is used to judge the explanatory power of the explanatory variables on the dependent variable. The R^2 denotes the percentage of variations in the dependent variable accounted for by the variations in the independent variables. Thus, the higher the R^2 , the more the model is able to explain the changes in the dependent variable. Hence, the better the regression based on OLS

technique, and this is why the R^2 is called the co-efficient of determination as it shows the amount of variation in the dependent variable explained by explanatory variables.

However, if R^2 equals one, it implies that there is 100% explanation of the variation in the dependent variable by the independent variables and this indicates a perfect fit of regression line. While where R^2 equals zero. It indicates that the explanatory variables could not explain any of the changes in the dependent variable. Therefore, the higher and closer the R^2 is to 1, the better the model fits the data. Note the above explanation goes for the adjusted R^2.

Standard Error test (S.E): The standard error test is used to test if the regression coefficients of the explanatory variables are statistically insignificant, individually (different from zero). The precision or reliability of estimates (i.e., the intercepts and scopes) would also be measured by the Standard Error.

The F-test: The F-statistic is used to test whether or not, there is a significant impact between the dependent and the independent variables. In the regression equation, if calculated F is greater than the F table value, then there is a significant impact between the dependent and the independent variables in the regression equation. While if the calculated F is smaller or less than the table F, there is no significant impact between the dependent and the independent variable.

3.6 Test for Research Hypotheses

This study tested the research hypotheses using the result of the parsimonious ECM and the t.statistic (t-test). The t-statistic test tells us if there is an existence of any significant relationship between the dependent variable and the explanatory variables. The t-test was conducted at 0.05 or 5% level of significance.

Decision rule: Reject H_0 if $t_{cal} > t_{a/2}, (n-k)$. Otherwise, we accept.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS OF RESULT

4.1 Data Presentation

This chapter is for presentation and analysis of data, it estimated the model that was specified in the previous chapter. The focus of the chapter is to use the estimated results to test the various hypotheses and the relevant research questions. The chapter also comprises the policy implications of the results.

4.2 Summary of Government Sectoral Expenditure

Summary of government sectoral expenditure on solid minerals, oil refineries, health, electricity generation and education for the period under review are shown on table 4.1.

Table 4.1: Government Sectoral Expenditure 1980-2013

Years	GSLM N'b	GEOR N'b	GEHE N'b	GEEG N'b	GEED N'b	RGDP
1980	2210.000	16.60000	109,5000	375.72000	467.0000	31546.00
1981	312.0000	18.10000	72,00000	340,3000	358,3000	205222.1
1982	385.0000	27,20000	87.50000	258.0000	1358.300	199685.3
1983	430.0000	92.40000	155.3000	383.0000	8356.600	185598.4
1984	1567.000	50,70000	119.8000	429.1000	973.5000	183563.0
1985	1933.000	63.70000	155.8000	362.4000	1020.000	201036.3
1986	2561.000	111.9000	143.6000	429.5000	1115.100	205971.4
1987	2991.000	180.0000	139.1000	523.0000	2564.400	204806.5
1988	2876.000	189.5000	167.7000	662.0000	1586.900	219875.6
1989	2779.000	261.1000	279.2000	670.0000	1509.000	236729.6
1990	14850.00	512.1000	166.9000	554.6000	6578.500	267550.0
1991	13926.00	332.1000	2666.000	342.8000	6915.600	265379.1
1992	15745.00	214.8000	626.0000	203.2000	13835.20	274833.3
1993	107873.0	397.1000	401.1000	435.4000	17722.10	274833.3
1994	9589.000	418.2000	312.0000	247.4000	1324.000	275450.0
1995	12074.00	319.6000	188.0000	324.2000	20442.00	281407.4
1996	11697.00	494.0000	352.9000	551.4000	58407.00	293745.4
1997	12127.00	348.000	961.0000	2152.000	41000.00	302022.5
1998	12809.00	137.6000	725.2000	4363.100	55000.00	310890.1
1999	12069.00	521.6000	3192.000	4636.300	56000.00	312183.5
2000	107795.0	265.5000	319.2000	2583.300	56000.00	329178.7
2001	16168.00	136.2000	4860.500	4082.100	66000.00	356994.3
2002	15437.00	313.5000	8793.200	4227.800	16300.00	433203.5
2003	14859.00	402.3000	11612.60	5022.300	100000.0	477533.0
2004	14859.00	569.7000	2453.500	5349.000	1555424.	527576.0
2005	13882.00	1838.800	50563.20	23006.10	203902.9	561931.4
2006	13980.oo	7062.700	33254.50	23327.50	363363.0	595821.6
2007	14040.00	11072.20	34198.50	29163.30	397315.2	634251.1
2008	13089.00	13572.40	27440.80	24072.20	41203.20	672202.6
2009	13537.00	14027.40	35791.80	24072.20	431201.0	718977.3
2010	14012.00	28154.60	38273.40	24822.90	583647.4	775525.7
2011	14629.00	57637.20	40177.90	28008.60	619374.8	834000.8
2012	15427.00	60088.70	42291.80	95046.10	662193.3	888893.0
2013	20164.00	63547.20	48036.40	95002.5O	7193847.7	926757.6

Source: World Bank Development Indicators for Nigeria (Issues 14, 15, and 16, 2013).
Key:

GSLM = Government Expenditure on Solid Minerals

GEOR = Government Expenditure on Oil Refineries

GEHE = Government Expenditure on Health

GEEG = Government Expenditure on Electricity Generation

GEED = Government Expenditure on Education

GRGDP = Growth in Real Gross Domestic Products

The size of government expenditure has witnessed astronomical increase over the years in most sectors of the economies of the world Nigeria inclusive. The size of government expenditure on solid minerals in 1980 increased to ₦2210m, in 1990 it increased to N14850m. It was ₦16168m and ₦20164m in 2001 and 2013 respectively. Government expenditure on oil refineries in 1980 was ₦16.6m, in 1990 it increased to ₦512.1m, it was ₦136.2m and ₦63547.2m in 2001 and 2013 respectively. Government expenditure on health in 1980 was N109.5m, in 1990 it was ₦166.9m, it was N4860.5m and ₦48036.4m in 2001 and 2013 respectively. Government expenditure in electricity generation in 1980 was N375.7m, in 1990 it increased to ₦554.6m, it was ₦4082.1m and N95002.5m in 2001 and 2013 respectively. Government expenditure on education in 1980 was ₦467m, in 1990 it was ₦6578.5m, it increased to ₦66000m and ₦7193847.7m in 2001 and 2013 respectively.

4.3 Presentation and Interpretation of Result

The first step in the analysis of result is to test the time series property of the data. The Augemented Dickey Fuller (ADF) unit root test was used for this purpose. The ADF is preferable to the Dickey Fuller (DF) unit root test since it corrects for first order serial correlation in the variable. The result of the ADF unit root test is shown in table 4.2.

Table 4.2: Summary of ADF Unit Root Test Result.

Variables	Level Data	First Difference	1% CV	5% CV	10% CV	Order of integration
GEED	-1.96	-6.77*	-3.67	-2.96	-2.62	I (1)

GEEG	2.03	-3.44**	-3.67	-2.96	-2.62	I (1)
GEHE	0.16	-5.22*	-3.67	-2.96	-2.62	I (1)
GSLM	-2.21	-6.43*	-3.67	-2.96	-2.62	I (1)
GEOR	0.74	-3.18**	-3.67	-2.96	-2.62	I (1)
GRGDP	1.47	-3.17*	-3.67	-2.96	-2.62	I (1)

NB: (1) * Indicates significance at the 1 percent level.
(2) ** Indicates significance at the 5 percent level.
(3) CV means critical value.

The ADF result shows that all the variables were originally not stationary. They however became stationary after the first difference was taken. While the government expenditure on education, government expenditure on solid mineral and the Real Gross Domestic product were stationary at the 1% level, the government expenditure on electricity generation and government expenditure on oil refineries were stationary at the 5 percent level. This thus sets the pace for the second test which is the cointegration test.

Cointegration Test

The Johansen methodology was adopted to test for cointegration. The Johansen cointegration test has the advantage amongst others for permitting for more than one cointegrating equation. The result of the Johansen cointegration test is shown in table 4.3.

Table 4.3: Summary of Johansen Cointegration Test Result

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.814804	143.3982	94.15	103.18
At most 1 **	0.737710	91.12167	68.52	76.07
At most 2 *	0.553553	49.63419	47.21	54.46
At most 3	0.405924	24.63474	29.68	35.65
At most 4	0.238915	8.491567	15.41	20.04
At most 5	0.000911	0.028239	3.76	6.65

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.814804	52.27657	39.37	45.10
At most 1 **	0.737710	41.48748	33.46	38.77
At most 2	0.553553	24.99945	27.07	32.24
At most 3	0.405924	16.14318	20.97	25.52
At most 4	0.238915	8.463328	14.07	18.63
At most 5	0.000911	0.028239	3.76	6.65

The result of the Johansen cointegration test indicates a long run relationship among the variables. This is because the Trace statistic indicates 3 cointegrating equation, while the Max-Eigen statistic indicates 2 cointegrating equation. Gujarrati (2003) noted that when there is conflicting result between the Trace and Max-Eigen statistic, the trace statistics supersedes. A long run relationship requires at least one cointegrating equation. This permits us to estimate the Vector Error Correction Model.

Vector Error Correction (VEC)

The VEC is used in this case to establish the true cointegrating equations. The result of the VEC is shown in table 4.4.

Table 4.4: Summary of VEC Result

Cointegrating Eq:	CointEq1
LGRGDP(-1)	1.000000
LGSLM(-1)	0.177505 (0.03637) [4.88023]
LGEOR(-1)	-0.125135 (0.02416) [-5.17915]
LGEHE(-1)	0.356730 (0.06771) [5.26863]
LGEEG(-1)	-0.156588 (0.06095) [-2.56921]
LGEED(-1)	-0.401996 (0.05476) [-7.34117]
C	-10.86526

Error Correction:	D(LGRGDP)	D(LGSLM)	D(LGEOR)	D(LGEHE)	D(LGEEG)	D(LGEED)
CointEq1	-0.021234 (0.04516) [-0.47023]	-1.163247 (0.83305) [-1.39637]	0.485582 (0.71412) [0.67997]	-1.610538 (0.74584) [-2.15937]	-0.761211 (0.52150) [-1.45965]	-2.546771 (1.13073) [-2.25233]

The result of the VEC indicates that the government expenditure on health and government expenditure on education constitute the true cointegrating equation. The others are statistically flawed, indicating that the government expenditure on education and health constitute the main determinants of the long run relationship. The ones that are statistically flawed played less role in determining the long run relationship. However, they are also relevant hence all the variables can be used to conduct the test of the overparameterize ECM and the parsimonious ECM. Because according to Gujarrati (2003) the condition for a long run relationship for a model is satisfied with at least one co-integrating equation.

Overparameterize ECM

The overparameterize Error Correction Model include 2 lags of each independent variables. The result of the Overparameterize ECM is shown in table 4.5.

Table 4.5: Summary of Overparameterize ECM

Dependent Variable: DLGRGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLGSLM	0.003623	0.015209	0.238242	0.8151
DLGSLM(-1)	0.123382	0.044545	2.769809	0.0150
DLGSLM(-2)	-0.001679	0.015700	-0.106935	0.9164
DLGEOR	0.712714	0.277869	2.564931	0.0201
DLGEOR(-1)	-0.007894	0.021246	-0.371528	0.7158
DLGEOR(-2)	0.027880	0.018497	1.507325	0.1540
DLGEHE	-1.217184	0.298915	-4.072002	0.0008
DLGEHE(-1)	-0.057332	0.037823	-1.515806	0.1518
DLGEHE(-2)	0.003180	0.017136	0.185584	0.8554
DLGEEG	-0.000587	0.025834	-0.022734	0.9822
DLGEEG(-1)	1.067296	0.364809	2.925626	0.0094
DLGEEG(-2)	-0.005028	0.030660	-0.163981	0.8721
DLGEED	-0.012422	0.010840	-1.145936	0.2710
DLGEED(-1)	-0.011788	0.010929	-1.078533	0.2990
DLGEED(-2)	-0.515116	0.221153	-2.329223	0.0324
ECM(-1)	-0.589453	0.216694	-2.720214	0.0166
C	0.098727	0.026586	3.713499	0.0023

The overparameterize ECM result shows that one period lag of government expenditure on solid minerals, one period lag value of government expenditure on oil refinery and current value of expenditure on health, one period lag value of government expenditure on electricity generation and the two period lags of government expenditure on education is statistically significant. The Error Correction Mechanism (ECM) is also statistically significant.

The implication is that it is only the significant variables in the overparameterize ECM were thus qualified to be used to form the parsimonious ECM model, which was used to test the hypotheses having deleted the lags of the variables which were not statistically significant for the analysis.

Parsimonious ECM and Test of Hypotheses

The parsimonious ECM was used to assess the various research questions and test the relevant hypotheses. The parsimonious ECM was formed by deleting insignificant variables from the overparameterize ECM model. The Schwarz criterion (SC) and the Akaike information criterion were used to select the appropriate lag length. The result of the parsimonious ECM used to test the various hypotheses are shown in table 4.6:

Table 4.6: Summary of Parsimonious ECM Result

Dependent Variable: DLGRGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLGSLM(-1)	0.046777	0.017156	2.726589	0.0118
DLGEOR	0.174436	0.086412	2.018652	0.0559
DLGEHE	0.525107	0.155080	3.386038	0.0025
DLGEEG(-1)	0.181737	0.076316	2.381369	0.0221
DLGEED(-2)	0.243388	0.060003	4.056269	0.0002
ECM(-1)	-0.212884	0.092381	-2.304399	0.0302
C	0.064734	0.011797	5.487321	0.0000

R^2 = 0.65, F.statistic = 31.33, SC = -2.76, AIC = -3.06, DW = 2.12, t.critical = 1.96, F.critical = 4.01.

The t-statistic in the parsimonious ECM result is used to test the various hypotheses and assess the research questions. The decision rule is to accept the particular alternative hypothesis and gives an affirmative answer to the research question if the t-calculated is greater than the t-critical. The reverse is the case if the t-calculated < t-critical

The ECM has the appropriate negative sign which corresponds to apprior, expectation for ECM, and indicates that the errors have been at least been made up for appropriately. This indicates a satisfactory speed of adjustment of the long run and short run equilibrium. The ECM in the above result indicates that 21% of the errors were corrected in each period, and this is satisfactory according to Gujiratti (2003).

Test of Hypothesis One and Research Question One

The first Hypothesis and first Research Question are briefly restated below:

Ho_1: Government expenditure on education has no significant effect on the level of economic growth in Nigeria.

RQ_1: What is the effect of government expenditure on education on the level of economic growth in Nigeria?

The t-calculated for government expenditure on education is 4.06 which is greater than the t-critical of 1.196, an indication of the validation of the alternative hypothesis that government expenditure on education has a significant effect on the level of economic growth in Nigeria. An indication of an affirmative answer to the research question whether government expenditure on education has positive effect on the level of economic growth in Nigeria. This indicates that government expenditure is a potent instrument in generating a desired level of economic growth in Nigeria.

Test of Hypothesis Two and Research Question Two.

The second hypothesis and the second research question are stated below:

Ho_2: Government expenditure on electricity generation has no significant effect on the level of economic growth in Nigeria.

RQ_2: What is the effect of government expenditure on electricity generation on the level of economic growth in Nigeria?

Since the t-calculated of 2.38 is greater than the t-critical of 1.96, we accept the alternative hypothesis that government expenditure on electricity generation has a significant effect on the level of economic growth, thus giving a yes answer to the research question whether government expenditure on electricity generation has a positive effect on the level of economic growth in Nigeria.

Test of Hypothesis Three and Research Question Three

The third hypothesis and third research question are restated below:

Ho_3: Government expenditure on health has no significant effect on the level of economic growth in Nigeria.

RQ_3: What is the effect of government expenditure in health on the level of economic growth in Nigeria?

The t-calculated for health expenditure of 3.39 > t-critical of 1.96 suggesting a validation of the alternative hypothesis that government expenditure on health has a significant effect on the level of economic growth in Nigeria. An affirmative answer to the research question which implies that in Nigeria government expenditure on health matters for generating the desired level of economic growth in Nigeria.

Test of Hypothesis four and Research Question four

The fourth hypothesis and fourth research question state that:

Ho_4: Government expenditure on oil refineries has no significant effect on the level of economic growth in Nigeria.

RQ_4: What is the effect of government expenditure on oil refineries on the level of economic growth in Nigeria?

The null hypothesis of no effect of government expenditure on oil refineries on the level of economic growth in Nigeria was rejected since the t-calculated of 2.02 is greater than the t-critical of 1.96. This result gives a yes answer to the fourth research question suggesting that indeed government expenditures on oil refineries could be a good instrument for generating the desired level of economic growth in Nigeria.

Test of Hypothesis five and Research Question five

The last hypothesis and last research question are stated below as:

Ho_5: Government expenditure on solid minerals has no significant effect on the level of economic growth in Nigeria.

RQ_5: What is the effect of government expenditure on solid minerals on the level of economic growth in Nigeria?

Since the t-calculated of 2.73 is greater than the t-critical of 1.96, the result insinuates an acceptance of the alternative hypothesis that government expenditure on solid minerals has a significant effect on the level of economic growth in Nigeria. An affirmative answer which suggests that government expenditure on solid minerals has a positive effect on the level of economic growth in Nigeria.

4.4 Policy Implication

The result has important implications on the effect of sectoral government expenditure on economic growth. The result indicates that improved government spending on solid mineral could bring about the desired positive change in the level of economic growth in Nigeria. The result suggests further that government expenditure on oil refineries has the potentials of increasing the level of economic growth in Nigeria, the result shows further that government spending on electricity generation has the potentials of improving the level of economic growth in Nigeria. The result further insinuates that government expenditure on education and health has the potentials of improving the level of economics growth in Nigeria.

4.5 Discussion of Findings

The result shows that government expenditure on solid minerals has a significant and positive effect on the level of economic growth. The result also shows that government expenditure on oil Refineries has a significant and positive effect on the level of economic growth for the period under review. This is an indication that these two subsectors, if well funded and properly managed have the potentials to increase the level of economic growth in Nigeria. The result of government expenditure on Health and Education has a significant and positive

effect on the level of economic growth in Nigeria. This is an indication that a healthy and educated nation is a wealthy nation. The result also shows that government expenditure on electricity generation has a significant and positive effect on the level of economic growth in Nigeria. This highlights the importance of the power sector in generating the desired level of economic growth in a developing economy such as the Nigerian economy.

CHAPTER FIVE

SUMMARY OF FINDINGS, CONCLUSION AND RECOMMENDATIONS

5.1 Summary of Findings

The following are the findings of the research:

(a) Government expenditure on solid mineral has a positive and significant effect on the level of economic growth in Nigeria. The statistical significance of the result suggests the validation of the alternative hypothesis of a significant effect of government expenditure on solid minerals on the level of economic growth in Nigeria.

An increase in government expenditure or solid minerals by 100 percent increased the level of economic growth 5 percent.

(b) Government expenditure on oil refineries has a significant and positive effect on the level of economic growth. This indicates the validation of the alternative hypothesis of a significant effect of government expenditure on oil refineries on the level of economic growth in Nigeria.

An increase in government expenditure on oil refineries by 100 percent increase the level of economic growth by 17 percent.

(c) Government expenditure on health has a significant and positive effect on the level of economic growth in Nigeria. This is symptomatic of the validation of the alternative hypothesis of a significant effect of government expenditure on health on the level of economic growth in Nigeria.

An increase in government expenditure on health by 100 percent increased the level of economic growth by 53 percent.

The relatively high elasticity is symptomatic of its significance in influencing the level of economic growth in Nigeria.

(d) Government expenditure on electricity generation has a significant and positive effect on the level of economic growth in Nigeria. The result indicates the validation of the alternative hypothesis of a significant effect of government expenditure on electricity generation on the level of economic growth in Nigeria.

An increase in government expenditure on electricity by 100 percent increased the level of economic growth by 18 percent.

(e) The government expenditure on education has a significant and positive effect on the level of economic growth in Nigeria. The significance indicates a validation of the alternative hypothesis that there is a significant effect of government expenditure on education on the level of economic growth in Nigeria.

An increase in the government expenditure on education by 100 percent, increased the level of economic growth by 24 percent.

5.2 Conclusion

This research has been on the effect of government sectoral expenditure on the growth of the Nigerian economy. This study has thus made remarkable contribution to the issue of sectoral distribution of government expenditure and the effect on the level of economic growth. Policy makers world over are divided on whether huge government expenditure is beneficial or detrimental to the level of economic growth and they are even more divided on the priority sectors of sectoral distribution of government expenditure on the development process. Those in support of huge government spending mostly base their argument on the importance of public goods such as education and health and the provision of basic infrastructure and their role in economic growth. The critics of huge government spending are of the view that if government spending is too large, there is the tendency of undermining economic growth by transferring additional resources from the productive sectors to the government which uses them inefficiently. They further argued that expanding public sector through huge government spending complicates efforts to implement pro-growth policies like tax reforms.

The cointegration test with its implies ECM was used to analyse the data. The ADF unit root test indicates that all the variables were originally non-stationary, but became stationary after the first difference was taken. The result of the cointegration test shows a long run relationship among the variables. All the alternative hypotheses were validated and hence

given an affirmative answer to the relevant research questions. The parsimonious ECM result indicates that government expenditure on solid minerals and oil refineries has the potentials of generating the desired level of economic growth in Nigeria. The result shows further that government expenditure on electricity generation has influence on the level of economic growth in Nigeria. The statistical significance of the ECM indicates a satisfactory speed of adjustment, it indicates that about 21 percent of the errors are corrected each period.

5.3 Recommendations

The following recommendations are therefore made from the results of this study:

5.3.1 Policy Recommendations

(a) Government should increase her expenditure on the solid minerals subsector. The solid mineral subsector if well financed and operated, has the potentials of generating the desired level of economic growth. Nigeria can borrow from the example of Australia and China which have successfully explored the benefit of good government spending on the solid mineral sector.

(b) The government should increase her budgetary allocation to the oil refineries subsector. If well managed, the expenditure on the oil refineries subsector could help expand the sector and reduce the dependence on importation of refined products. The government should also explore the by-products of petroleum products. The government should follow the spending pattern of countries like Jordan, Kuwait, United Arab Emirants etc.

(c) Government should not only increase budgetary allocation to the health sector, but should monitor how the expenditures are managed. This will generate the desired level of economic growth, because a healthy nation, in this case is a growing nation.

(d) Government expenditure on electricity generation should be improved. If well managed, this will stabilize the level of power supply in the country which will boost investment and hence economic growth.

(e) The government should lower her recurrent expenditure and increase her capital expenditure on the key sectors and subsectors such as solid minerals, oil refineries, education, electricity and the health sector.

5.3.2 Recommendations for Further Studies

An assessment of government sectoral expenditure on economic growth could be done in a better fashion if other countries are simultaneously considered. The study thus recommends that further studies be carried out on the effect of sectoral government expenditure on economic growth in Sub-Saharan African.

5.4 Contribution to Knowledge

This study has contributed to knowledge in the following ways:

(a) The study has for the first time assessed the effect of government expenditure on solid minerals on the level of economic growth. This is quite important since the solid minerals subsector has been neglected by previous researchers in the analysis of the effect of government sectoral expenditure on the level of economic growth in Nigeria. Despite the fact that the solid minerals subsector in Nigeria has the potentials to significantly enhance the much needed diversification of the economy.

(b) The study has also for the first time employ a model that introduced government expenditure on the oil refineries subsector in the analysis of the effect of government sectoral expenditure on the level of economic growth in Nigeria. This is crucial since despite the huge government spending on the oil refineries subsectors through Turn Around Maintainance (TAM), Nigeria still imports vast amount of refined products. This key component of government expenditure has also been ignored by previous researchers.

(c) Also, the study has contributed to knowledge because it simultaneously adopted the cointegration technique and the error correction mechanism. This was done after the time series property of the variables were considered. Other studies applied the conventional ordinary least squares without considering the time series property. Even those that adopted the cointegration technique did not at the same time applied the ECM on the specific sector models.

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Appendix i: Augumented Dickey Fuller (ADF) Test Statistics

ADF Test Statistic	1.473968	1% Critical Value*	-3.6496
		5% Critical Value	-2.9558
		10% Critical Value	-2.6164

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GRGDP)
Method: Least Squares
Date: 06/11/15 Time: 12:53
Sample(adjusted): 1982 2013
Included observations: 32 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GRGDP(-1)	0.079599	0.014541	5.473968	0.0000
D(GRGDP(-1))	0.013764	0.087314	0.157638	0.8758
C	-8922.475	5908.520	-1.510103	0.1418

R-squared	0.556079	Mean dependent var	22547.98
Adjusted R-squared	0.525463	S.D. dependent var	22706.55
S.E. of regression	15641.78	Akaike info criterion	22.24234
Sum squared resid	7.10E+09	Schwarz criterion	22.37975
Log likelihood	-352.8774	F-statistic	18.16344
Durbin-Watson stat	1.091822	Prob(F-statistic)	0.000008

ADF Test Statistic	-3.171011	1% Critical Value*	-3.6576
		5% Critical Value	-2.9591
		10% Critical Value	-2.6181

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GRGDP 2)
Method: Least Squares
Date: 06/11/15 Time: 12:54
Sample(adjusted): 1983 2013
Included observations: 31 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GRGDP(-1))	-0.269853	0.124298	-2.171011	0.0386
D(GRGDP(-1),2)	0.053851	0.079539	0.677033	0.5039
C	7557.697	3885.139	1.945284	0.0618

R-squared	0.144235	Mean dependent var	1400.045
Adjusted R-squared	0.083109	S.D. dependent var	15284.85
S.E. of regression	14635.92	Akaike info criterion	22.11211
Sum squared resid	6.00E+09	Schwarz criterion	22.25088
Log likelihood	-339.7377	F-statistic	2.359631
Durbin-Watson stat	2.362204	Prob(F-statistic)	0.112970

Appendix ii: Augumented Dickey Fuller (ADF) Test Statistics

Continuation

ADF Test Statistic	0.744209	1% Critical Value*	-3.6496
		5% Critical Value	-2.9558
		10% Critical Value	-2.6164

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GEOR)
Method: Least Squares
Date: 06/11/15 Time: 12:51
Sample(adjusted): 1982 2013
Included observations: 32 after.adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GEOR(-1)	0.070894	0.095261	0.744209	0.4627
D(GEOR(-1))	0.277969	0.250941	1.107706	0.2771
C	1020.753	1020.544	1.000205	0.3255

R-squared	0.189889	Mean dependent var	1985.284
Adjusted R-squared	0.134019	S.D. dependent var	5715.421
S.E. of regression	5318.661	Akaike info criterion	20.08489
Sum squared resid	8.20E+08	Schwarz criterion	20.22230
Log likelihood	-318.3583	F-statistic	3.398782
Durbin-Watson stat	1.860477	Prob(F-statistic)	0.047195

ADF Test Statistic	-3.184287	1% Critical Value*	-3.6576
		5% Critical Value	-2.9591
		10% Critical Value	-2.6181

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GEOR,2)
Method: Least Squares
Date: 06/11/15 Time: 12:52
Sample(adjusted): 1983 2013
Included observations: 31 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GEOR(-1))	-0.645599	0.202745	-3.184287	0.0035
D(GEOR(-1),2)	0.104221	0.187655	0.555387	0.5830
C	1354.051	1048.464	1.291462	0.2071

R-squared	0.300619	Mean dependent var	111.2710
Adjusted R-squared	0.250663	S.D. dependent var	6272.332
S.E. of regression	5429.599	Akaike info criterion	20.12888
Sum squared resid	8.25E+08	Schwarz criterion	20.26766
Log likelihood	-308.9977	F-statistic	6.017688
Durbin-Watson stat	1.944473	Prob(F-statistic)	0.006699

Appendix iii: Augumented Dickey Fuller (ADF) Test Statistics

Continuation

ADF Test Statistic	-2.206645	1% Critical Value*	-3.6496
		5% Critical Value	-2.9558
		10% Critical Value	-2.6164

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GSLM)
Method: Least Squares
Date: 06/11/15 Time: 12:50
Sample(adjusted): 1982 2013
Included observations: 32 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GSLM(-1)	-0.912412	0.252981	-3.606645	0.0012
D(GSLM(-1))	-0.048619	0.183396	-0.265105	0.7928
C	15498.80	6042.281	2.565058	0.0158

R-squared	0.483832	Mean dependent var	620.3750
Adjusted R-squared	0.448234	S.D. dependent var	34023.03
S.E. of regression	25272.62	Akaike info criterion	23.20189
Sum squared resid	1.85E+10	Schwarz criterion	23.33930
Łog likelihood	-368.2303	F-statistic	13.59164
Durbin-Watson stat	2.015915	Prob(F-statistic)	0.000068

ADF Test Statistic	-6.429208	1% Critical Value*	-3.6576
		5% Critical Value	-2.9591
		10% Critical Value	-2.6181

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GSLM,2)
Method: Least Squares
Date: 06/11/15 Time: 12:51
Sample(adjusted): 1983 2013
Included observations: 31 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GSLM(-1))	-1.991902	0.309821	-6.429208	0.0000
D(GSLM(-1),2)	0.325725	0.178721	1.822528	0.0791
C	1093.337	5258.206	0.207930	0.8368

R-squared	0.777522	Mean dependent var	150.4516
Adjusted R-squared	0.761630	S.D. dependent var	59943.75
S.E. of regression	29266.40	Akaike info criterion	23.49803
Sum squared resid	2.40E+10	Schwarz criterion	23.63681
Log likelihood	-361.2195	F-statistic	48.92750
Durbin-Watson stat	2.126273	Prob(F-statistic)	0.000000

Appendix iv: Augumented Dickey Fuller (ADF) Test Statistics

Continuation

ADF Test Statistic	0.159501	1% Critical Value*	-3.6496
		5% Critical Value	-2.9558
		10% Critical Value	-2.6164

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GEHE)
Method: Least Squares
Date: 06/11/15 Time: 12:48
Sample(adjusted): 1982 2013
Included observations: 32 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GEHE(-1)	0.016291	0.102137	0.159501	0.8744
D(GEHE(-1))	-0.502354	0.176044	-2.853577	0.0079
C	1988.893	1831.830	1.085741	0.2865

R-squared	0.240791	Mean dependent var	1498.888
Adjusted R-squared	0.188432	S.D. dependent var	9585.921
S.E. of regression	8635.675	Akaike info criterion	21.05425
Sum squared resid	2.16E+09	Schwarz criterion	21.19166
Log likelihood	-333.8680	F-statistic	4.598831
Durbin-Watson stat	2.137803	Prob(F-statistic)	0.018418

ADF Test Statistic	-5.218111	1% Critical Value*	-3.6576
		5% Critical Value	-2.9591
		10% Critical Value	-2.6181

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GEHE,2)
Method: Least Squares
Date: 06/11/15 Time: 12:49
Sample(adjusted): 1983 2013
Included observations: 31 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GEHE(-1))	-1.695035	0.324837	-5.218111	0.0000
D(GEHE(-1),2)	0.135632	0.187968	0.721568	0.4765
C	2483.914	1621.339	1.532014	0.1367

R-squared	0.749484	Mean dependent var	184.8097
Adjusted R-squared	0.731590	S.D. dependent var	16796.83
S.E. of regression	8702.150	Akaike info criterion	21.07229
Sum squared resid	2.12E+09	Schwarz criterion	21.21107
Log likelihood	-323.6205	F-statistic	41.88470
Durbin-Watson stat	2.041848	Prob(F-statistic)	0.000000

Appendix v: Augumented Dickey Fuller (ADF) Test Statistics

Continuation

ADF Test Statistic	2.028583	1% Critical Value*	-3.6496
		5% Critical Value	-2.9558
		10% Critical Value	-2.6164

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GEEG)
Method: Least Squares
Date: 06/11/15 Time: 12:47
Sample(adjusted): 1982 2013
Included observations: 32 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GEEG(-1)	0.472130	0.232739	2.028583	0.0518
D(GEEG(-1))	-0.630796	0.349903	-1.802773	0.0818
C	308.5882	2534.492	0.121755	0.9039

R-squared	0.124457	Mean dependent var	2958.194
Adjusted R-squared	0.064075	S.D. dependent var	12261.15
S.E. of regression	11861.84	Akaike info criterion	21.68910
Sum squared resid	4.08E+09	Schwarz criterion	21.82651
Log likelihood	-344.0256	F-statistic	2.061148
Durbin-Watson stat	1.955576	Prob(F-statistic)	0.145554

ADF Test Statistic	-3.438054	1% Critical Value*	-3.6576
		5% Critical Value	-2.9591
		10% Critical Value	-2.6181

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GEEG,2)
Method: Least Squares
Date: 06/11/15 Time: 12:47
Sample(adjusted): 1983 2013
Included observations: 31 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GEEG(-1))	-0.273323	0.623947	-0.438054	0.6647
D(GEEG(-1),2)	-0.764809	0.613382	-1.246872	0.2228
C	2491.012	2373.804	1.049376	0.3030

R-squared	0.534244	Mean dependent var	1.248387
Adjusted R-squared	0.500976	S.D. dependent var	17755.47
S.E. of regression	12542.76	Akaike info criterion	21.80344
Sum squared resid	4.40E+09	Schwarz criterion	21.94221
Log likelihood	-334.9533	F-statistic	16.05868
Durbin-Watson stat	1.852112	Prob(F-statistic)	0.000023

Appendix vi: Augumented Dickey Fuller (ADF) Test Statistics

Continuation

ADF Test Statistic	-1.961684	1% Critical Value*	-3.6496
		5% Critical Value	-2.9558
		10% Critical Value	-2.6164

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GEED)
Method: Least Squares
Date: 06/11/15 Time: 12:45
Sample(adjusted): 1982 2013
Included observations: 32 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
GEED(-1)	-0.428229	0.218297	-1.961684	0.0595
D(GEED(-1))	-0.279041	0.189529	-1.472288	0.1517
C	100396.3	65005.76	1.544421	0.1333

R-squared	0.341930	Mean dependent var	22469.57
Adjusted R-squared	0.296546	S.D. dependent var	371404.3
S.E. of regression	311504.7	Akaike info criterion	28.22528
Sum squared resid	2.81E+12	Schwarz criterion	28.36269
Log likelihood	-448.6044	F-statistic	7.534142
Durbin-Watson stat	2.110532	Prob(F-statistic)	0.002317

ADF Test Statistic	-6.765762	1% Critical Value*	-3.6576
		5% Critical Value	-2.9591
		10% Critical Value	-2.6181

*MacKinnon critical values for rejection of hypothesis of a unit root.

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(GEED,2)
Method: Least Squares
Date: 06/11/15 Time: 12:46
Sample(adjusted): 1983 2013
Included observations: 31 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GEED(-1))	-2.061357	0.304675	-6.765762	0.0000
D(GEED(-1),2)	0.369842	0.175620	2.105926	0.0443
C	45309.47	56644.76	0.799888	0.4305

R-squared	0.786213	Mean dependent var	1812.626
Adjusted R-squared	0.770943	S.D. dependent var	654892.9
S.E. of regression	313431.2	Akaike info criterion	28.24031
Sum squared resid	2.75E+12	Schwarz criterion	28.37909
Log likelihood	-434.7248	F-statistic	51.48585
Durbin-Watson stat	2.044315	Prob(F-statistic)	0.000000

Appendix vii: Unrestricted Cointegration Rank Test

Date: 06/11/15 Time: 12:40
Sample(adjusted): 1983 2013
Included observations: 31 after adjusting endpoints
Trend assumption: Linear deterministic trend
Series: LGRGDP GSLM LGEOR LGEHE LGEEG LGEED
Lags interval (in first differences): 1 to 2

Unrestricted Cointegration Rank Test

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.814804	143.3982	94.15	103.18
At most 1 **	0.737710	91.12167	68.52	76.07
At most 2 *	0.553553	49.63419	47.21	54.46
At most 3	0.405924	24.63474	29.68	35.65
At most 4	0.238915	8.491567	15.41	20.04
At most 5	0.000911	0.028239	3.76	6.65

*(**) denotes rejection of the hypothesis at the 5%(1%) level
Trace test indicates 3 cointegrating equation(s) at the 5% level
Trace test indicates 2 cointegrating equation(s) at the 1% level

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	5 Percent Critical Value	1 Percent Critical Value
None **	0.814804	52.27657	39.37	45.10
At most 1 **	0.737710	41.48748	33.46	38.77
At most 2	0.553553	24.99945	27.07	32.24
At most 3	0.405924	16.14318	20.97	25.52
At most 4	0.238915	8.463328	14.07	18.63
At most 5	0.000911	0.028239	3.76	6.65

*(**) denotes rejection of the hypothesis at the 5%(1%) level
Max-eigenvalue test indicates 2 cointegrating equation(s) at both 5% and 1% levels

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

LGRGDP	LGSLM	LGEOR	LGEHE	LGEEG	LGEED
-6.072847	-1.077963	0.759924	-2.166366	0.950933	2.441259
-30.18672	-0.182640	2.162778	4.911351	-2.131478	1.766265
10.99900	-1.262299	-0.392914	-0.904071	-2.350920	1.042297
-1.212541	0.927643	0.386040	-1.375240	0.269668	0.665140
7.808518	-0.105831	-1.576634	-0.566510	-0.036929	0.445189
6.764046	0.014350	-0.004431	-1.217715	0.527543	-0.112174

Unrestricted Adjustment Coefficients (alpha):

D(LGRGDP)	0.003496	0.002580	-0.014067	-0.004481	0.007863	0.000489
D(LGSLM)	0.191549	-0.088920	0.054800	-0.249235	-0.178266	0.002921
D(LGEOR)	-0.079960	-0.000693	0.069921	-0.213814	0.140084	-0.005229
D(LGEHE)	0.265203	-0.140499	0.039962	0.067993	0.196288	-0.005893
D(LGEEG)	0.125347	0.037057	0.205296	0.039153	0.061325	0.004702

Appendix viii: Unrestricted Cointegration Rank Test Continuation

D(LGEED)	-0.419370	-0.464489	0.172341	0.015001	-0.126598

1 Cointegrating Equation(s): Log likelihood -28.76436

Normalized cointegrating coefficients (std.err. in parentheses)

LGRGDP	LGSLM	LGEOR	LGEHE	LGEEG	LGEED
1.000000	0.177505	-0.125135	0.356730	-0.156588	-0.401996
	(0.03637)	(0.02416)	(0.06771)	(0.06095)	(0.05476)

Adjustment coefficients (std.err. in parentheses)

D(LGRGDP)	-0.021234
	(0.04516)
D(LGSLM)	-1.163247
	(0.83305)
D(LGEOR)	0.485582
	(0.71412)
D(LGEHE)	-1.610538
	(0.74584)
D(LGEEG)	-0.761211
	(0.52150)
D(LGEED)	2.546771
	(1.13073)

2 Cointegrating Equation(s): Log likelihood -8.020620

Normalized cointegrating coefficients (std.err. in parentheses)

LGRGDP	LGSLM	LGEOR	LGEHE	LGEEG	LGEED
1.000000	0.000000	-0.069759	-0.181029	0.078627	-0.046390
		(0.00623)	(0.01766)	(0.01437)	(0.01021)
0.000000	1.000000	-0.311966	3.029534	-1.325114	-2.003350
		(0.14261)	(0.40395)	(0.32874)	(0.23360)

Adjustment coefficients (std.err. in parentheses)

D(LGRGDP)	-0.099108	-0.004240
	(0.22814)	(0.00810)
D(LGSLM)	1.520948	-0.190242
	(4.17133)	(0.14811)
D(LGEOR)	0.506496	0.086320
	(3.62084)	(0.12857)
D(LGEHE)	2.630672	-0.260218
	(3.63318)	(0.12900)
D(LGEEG)	-1.879854	-0.141887
	(2.62968)	(0.09337)
D(LGEED)	16.56817	0.536900
	(4.56474)	(0.16208)

3 Cointegrating Equation(s): Log likelihood 4.479106

Normalized cointegrating coefficients (std.err. in parentheses)

LGRGDP	LGSLM	LGEOR	LGEHE	LGEEG	LGEED
1.000000	0.000000	0.000000	-17.81670	17.63238	3.459320
			(3.24432)	(2.86798)	(2.02814)
0.000000	1.000000	0.000000	-75.83782	77.17592	13.67432
			(14.2628)	(12.6083)	(8.91619)
0.000000	0.000000	1.000000	-252.8079	251.6336	50.25447
			(46.4159)	(41.0316)	(29.0162)

Appendix ix: Unrestricted Cointegration Rank Test Continuation

Adjustment coefficients (std.err. in parentheses)

D(LGRGDP)	-0.253833	0.013517	0.013764
	(0.21505)	(0.01098)	(0.01530)
D(LGSLM)	2.123696	-0.259417	-0.068283
	(4.40810)	(0.22514)	(0.31356)
D(LGEOR)	1.275557	-0.001941	-0.089735
	(3.80472)	(0.19432)	(0.27064)
D(LGEHE)	3.070210	-0.310662	-0.118036
	(3.84498)	(0.19638)	(0.27350)
D(LGEEG)	0.378194	-0.401032	0.094737
	(2.26872)	(0.11587)	(0.16138)
D(LGEED)	18.46374	0.319354	-1.390991
	(4.65057)	(0.23752)	(0.33081)

4 Cointegrating Equation(s): Log likelihood 12.55069

Normalized cointegrating coefficients (std.err. in parentheses)

LGRGDP	LGSLM	LGEOR	LGEHE	LGEEG	LGEED
1.000000	0.000000	0.000000	0.000000	-0.444505	0.113238
				(0.09086)	(0.07084)
0.000000	1.000000	0.000000	0.000000	0.230585	-0.568478
				(0.29714)	(0.23168)
0.000000	0.000000	1.000000	0.000000	-4.866170	2.775650
				(1.15122)	(0.89758)
0.000000	0.000000	0.000000	1.000000	-1.014604	-0.187806
				(0.10709)	(0.08350)

Adjustment coefficients (std.err. in parentheses)

D(LGRGDP)	-0.248400	0.009360	0.012034	0.023975
	(0.21224)	(0.01239)	(0.01529)	(0.03642)
D(LGSLM)	2.425904	-0.490618	-0.164498	-0.558466
	(3.94287)	(0.23020)	(0.28411)	(0.67658)
D(LGEOR)	1.534815	-0.200284	-0.172275	0.400651
	(3.40835)	(0.19899)	(0.24559)	(0.58486)
D(LGEHE)	2.987765	-0.247588	-0.091788	-1.394203
	(3.80960)	(0.22242)	(0.27451)	(0.65371)
D(LGEEG)	0.330719	-0.364712	0.109852	-0.328992
	(2.24892)	(0.13130)	(0.16205)	(0.38591)
D(LGEED)	18.44555	0.333270	-1.385200	-1.549198
	(4.65224)	(0.27162)	(0.33522)	(0.79831)

5 Cointegrating Equation(s): Log likelihood 16.78236

Normalized cointegrating coefficients (std.err. in parentheses)

LGRGDP	LGSLM	LGEOR	LGEHE	LGEEG	LGEED
1.000000	0.000000	0.000000	0.000000	0.000000	-0.236773
					(0.02650)
0.000000	1.000000	0.000000	0.000000	0.000000	-0.386911
					(0.11297)
0.000000	0.000000	1.000000	0.000000	0.000000	-1.056062
					(0.27036)
0.000000	0.000000	0.000000	0.000000	0.000000	-0.986724
					(0.09063)
0.000000	0.000000	0.000000	0.000000	1.000000	-0.787419
					(0.09785)

Appendix x: Unrestricted Cointegration Rank Test Continuation

Adjustment coefficients (std.err. in parentheses)

D(LGRGDP)	-0.253833	0.013517	0.013764
	(0.21505)	(0.01098)	(0.01530)
D(LGSLM)	2.123696	-0.259417	-0.068283
	(4.40810)	(0.22514)	(0.31356)
D(LGEOR)	1.275557	-0.001941	-0.089735
	(3.80472)	(0.19432)	(0.27064)
D(LGEHE)	3.070210	-0.310662	-0.118036
	(3.84498)	(0.19638)	(0.27350)
D(LGEEG)	0.378194	-0.401032	0.094737
	(2.26872)	(0.11587)	(0.16138)
D(LGEED)	18.46374	0.319354	-1.390991
	(4.65057)	(0.23752)	(0.33081)

4 Cointegrating Equation(s): Log likelihood 12.55069

Normalized cointegrating coefficients (std.err. in parentheses)

LGRGDP	LGSLM	LGEOR	LGEHE	LGEEG	LGEED
1.000000	0.000000	0.000000	0.000000	-0.444505	0.113238
				(0.09086)	(0.07084)
0.000000	1.000000	0.000000	0.000000	0.230585	-0.568478
				(0.29714)	(0.23168)
0.000000	0.000000	1.000000	0.000000	-4.866170	2.775650
				(1.15122)	(0.89758)
0.000000	0.000000	0.000000	1.000000	-1.014604	-0.187806
				(0.10709)	(0.08350)

Adjustment coefficients (std.err. in parentheses)

D(LGRGDP)	-0.248400	0.009360	0.012034	0.023975
	(0.21224)	(0.01239)	(0.01529)	(0.03642)
D(LGSLM)	2.425904	-0.490618	-0.164498	-0.558466
	(3.94287)	(0.23020)	(0.28411)	(0.67658)
D(LGEOR)	1.534815	-0.200284	-0.172275	0.400651
	(3.40835)	(0.19899)	(0.24559)	(0.58486)
D(LGEHE)	2.987765	-0.247588	-0.091788	-1.394203
	(3.80960)	(0.22242)	(0.27451)	(0.65371)
D(LGEEG)	0.330719	-0.364712	0.109852	-0.328992
	(2.24892)	(0.13130)	(0.16205)	(0.38591)
D(LGEED)	18.44555	0.333270	-1.385200	-1.549198
	(4.65224)	(0.27162)	(0.33522)	(0.79831)

5 Cointegrating Equation(s): Log likelihood 16.78236

Normalized cointegrating coefficients (std.err. in parentheses)

LGRGDP	LGSLM	LGEOR	LGEHE	LGEEG	LGEED
1.000000	0.000000	0.000000	0.000000	0.000000	-0.236773
					(0.02650)
0.000000	1.000000	0.000000	0.000000	0.000000	-0.386911
					(0.11297)
0.000000	0.000000	1.000000	0.000000	0.000000	-1.056062
					(0.27036)
0.000000	0.000000	0.000000	0.000000	0.000000	-0.986724
					(0.09063)
0.000000	0.000000	0.000000	0.000000	1.000000	-0.787419
					(0.09785)

Appendix xi: Unrestricted Cointegration Rank Test Continuation

Adjustment coefficients (std. err. In parentheses)

D(LGRGDP)	-0.187002	0.008528	-0.000363	0.019521	0.029398
	(0.20856)	(0.01186)	(0.01758)	(0.03499)	(0.02061)
D(LGSLM)	1.033915	-0.471752	0.116562	-0.457477	0.182222
	(3.78370)	(0.21520)	(0.31903)	(0.63474)	(0.37388)
D(LGEOR)	2.628667	-0.215109	-0.393137	0.321292	-0.301770
	(3.31244)	(0.18840)	(0.27929)	(0.55568)	(0.32731)
D(LGEHE)	4.520481	-0.268362	-0.401261	-1.505402	0.468802
	(3.57423)	(0.20329)	(0.30136)	(0.59960)	(0.35318)
D(LGEEG)	0.809579	-0.371202	0.013165	-0.363733	-0.434131
	(2.25729)	(0.12839)	(0.19033)	(0.37868)	(0.22305)
D(LGEED)	17.45701	0.346668	-1.185601	-1.477479	0.194816
	(4.67004)	(0.26562)	(0.39376)	(0.78343)	(0.46146)

Appendix xii: Vector Error Correction Estimates

Vector Error Correction Estimates
Date: 06/11/15 Time: 12:39
Sample(adjusted): 1983 2013
Included observations: 31 after adjusting endpoints
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1
LGRGDP(-1)	1.000000
LGSLM(-1)	0.177505 (0.03637) [4.88023]
LGEOR(-1)	-0.125135 (0.02416) [-5.17915]
LGEHE(-1)	0.356730 (0.06771) [5.26863]
LGEEG(-1)	-0.156588 (0.06095) [-2.56921]
LGEED(-1)	-0.401996 (0.05476) [-7.34117]
C	-10.86526

Error Correction:	D(LGRGDP)	D(LGSLM)	D(LGEOR)	D(LGEHE)	D(LGEEG)	D(LGEED)
CointEq1	-0.021234 (0.04516) [-0.47023]	-1.163247 (0.83305) [-1.39637]	0.485582 (0.71412) [0.67997]	-1.610538 (0.74584) [-2.15937]	-0.761211 (0.52150) [-1.45965]	-2.546771 (1.13073) [-2.25233]
D(LGRGDP(-1))	0.515591 (0.20794) [2.47957]	-1.216005 (3.83608) [-0.31699]	2.434429 (3.28843) [0.74030]	10.00640 (3.43448) [2.91351]	3.415328 (2.40145) [1.42220]	-4.282653 (5.20686) [-0.82250]
D(LGRGDP(-2))	-0.060274 (0.03019) [-1.99625]	-0.745214 (0.55703) [-1.33784]	0.509859 (0.47751) [1.06776]	0.669104 (0.49871) [1.34166]	0.103870 (0.34871) [0.29787]	0.277057 (0.75608) [0.36644]
D(LGSLM(-1))	-0.009126 (0.01210) [-0.75441]	-0.359066 (0.22317) [-1.60896]	-0.080318 (0.19131) [-0.41984]	-0.123040 (0.19980) [-0.61581]	-0.358238 (0.13971) [-2.56423]	-0.270126 (0.30291) [-0.89176]
D(LGSLM(-2))	-0.007147 (0.01235) [-0.57850]	-0.370822 (0.22792) [-1.62697]	-0.102239 (0.19538) [-0.52328]	0.022013 (0.20406) [0.10788]	-0.125341 (0.14268) [-0.87846]	-0.596933 (0.30937) [-1.92953]
D(LGEOR(-1))	-0.019263 (0.01484) [-1.29801]	0.127256 (0.27378) [0.46480]	-0.145961 (0.23470) [-0.62191]	-0.560056 (0.24512) [-2.28480]	-0.074220 (0.17139) [-0.43304]	-0.474285 (0.37162) [-1.27627]

Appendix xiii: Vector Error Correction Estimates Continuation

D(LGEOR(-2))	0.028335	-0.020461	-0.129455	-0.111082	-0.001918	0.177161
	(0.01531)	(0.28245)	(0.24213)	(0.25288)	(0.17682)	(0.38338)
	[1.85073]	[-0.07244]	[-0.53466]	[-0.43927]	[-0.01085]	[0.46210]
D(LGEHE(-1))	0.029357	0.704626	-0.135320	-0.413232	-0.109671	-0.173223
	(0.01677)	(0.30931)	(0.26516)	(0.27693)	(0.19364)	(0.41984)
	[1.75094]	[2.27802]	[-0.51034]	[-1.49217]	[-0.56638]	[-0.41259]
D(LGEHE(-2))	-0.000913	0.060207	-0.237283	0.103816	0.105402	-0.289903
	(0.01563)	(0.28834)	(0.24717)	(0.25815)	(0.18050)	(0.39137)
	[-0.05842]	[0.20881]	[-0.95999]	[0.40215]	[0.58393]	[-0.74073]
D(LGEEG(-1))	-0.027216	-1.165599	0.245433	-0.070012	-0.006802	-0.395784
	(0.02322)	(0.42843)	(0.36727)	(0.38358)	(0.26820)	(0.58152)
	[-1.17195]	[-2.72063]	[0.66827]	[-0.18252]	[-0.02536]	[-0.68060]
D(LGEEG(-2))	-0.006237	0.170709	0.350159	-0.502424	-0.248736	1.246715
	(0.03070)	(0.56633)	(0.48548)	(0.50704)	(0.35453)	(0.76870)
	[-0.20318]	[0.30143]	[0.72127]	[-0.99090]	[-0.70159]	[1.62185]
D(LGEED(-1))	-0.003569	-0.163157	0.162849	-0.304384	-0.066451	0.313710
	(0.01505)	(0.27768)	(0.23803)	(0.24861)	(0.17383)	(0.37690)
	[-0.23711]	[-0.58758]	[0.68414]	[-1.22436]	[-0.38228]	[0.83234]
D(LGEED(-2))	-0.002654	-0.074318	0.033213	0.070271	0.045418	0.124753
	(0.00944)	(0.17416)	(0.14930)	(0.15593)	(0.10903)	(0.23639)
	[-0.28112]	[-0.42672]	[0.22247]	[0.45066]	[0.41657]	[0.52773]
C	0.032102	0.392264	0.102287	0.054863	0.134680	0.407645
	(0.01461)	(0.26946)	(0.23099)	(0.24125)	(0.16869)	(0.36575)
	[2.19783]	[1.45574]	[0.44282]	[0.22741]	[0.79840]	[1.11455]
R-squared	0.588340	0.555163	0.341152	0.726694	0.499187	0.660834
Adj. R-squared	0.273540	0.214993	-0.162672	0.517695	0.116212	0.401472
Sum sq. resids	0.029137	9.916694	7.287321	7.949017	3.886315	18.27019
S.E. equation	0.041400	0.763764	0.654726	0.683805	0.478128	1.036686
F-statistic	1.868937	1.632017	0.677125	3.477027	1.303446	2.547918
Log likelihood	64.04362	-26.32070	-21.54540	-22.89254	-11.80094	-35.79199
Akaike AIC	-3.228621	2.601335	2.293252	2.380164	1.664577	3.212387
Schwarz SC	-2.581014	3.248942	2.940859	3.027771	2.312184	3.859994
Mean dependent	0.049514	0.127691	0.250204	0.203486	0.190603	0.202328
S.D. dependent	0.048573	0.862030	0.607199	0.984627	0.508593	1.340000
Determinant Residual Covariance		9.47E-06				
Log Likelihood		-28.76436				
Log Likelihood (d.f. adjusted)		-84.63633				
Akaike Information Criteria		11.26686				
Schwarz Criteria		15.43005				

Appendix xv: Summary of Overparametize ECM Result

Dependent Variable: DLGRDP
Method: Least Squares
Date: 06/11/15 Time: 12:27
Sample(adjusted): 1983 2013
Included observations: 31 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLGSLM	0.003623	0.015209	0.238242	0.8151
DLGSLM(-1)	0.123382	0.044545	2.769809	0.0150
DLGSLM(-2)	-0.001679	0.015700	-0.106935	0.9164
DLGEOR	0.712714	0.277869	2.564931	0.0201
DLGEOR(-1)	-0.007894	0.021246	-0.371528	0.7158
DLGEOR(-2)	0.027880	0.018497	1.507325	0.1540
DLGEHE	-1.217184	0.298915	-4.072002	0.0008
DLGEHE(-1)	-0.057332	0.037823	-1.515806	0.1518
DLGEHE(-2)	0.003180	0.017136	0.185584	0.8554
DLGEEG	-0.000587	0.025834	-0.022734	0.9822
DLGEEG(-1)	1.067296	0.364809	2.925626	0.0094
DLGEEG(-2)	-0.005028	0.030660	-0.163981	0.8721
DLGEED	-0.012422	0.010840	-1.145936	0.2710
DLGEED(-1)	-0.011788	0.010929	-1.078533	0.2990
DLGEED(-2)	-0.515116	0.221153	-2.329223	0.0324
ECM(-1)	-0.589453	0.216694	-2.720214	0.0166
C	0.098727	0.026586	3.713499	0.0023

R-squared	0.519709	Mean dependent var	0.049514
Adjusted R-squared	0.429195	S.D. dependent var	0.048573
S.E. of regression	0.049277	Akaike info criterion	2.880879
Sum squared resid	0.033995	Schwarz criterion	2.094499
Log likelihood	61.65363	F-statistic	19.96813
Durbin-Watson stat	2.007178	Prob(F-statistic)	0.000000

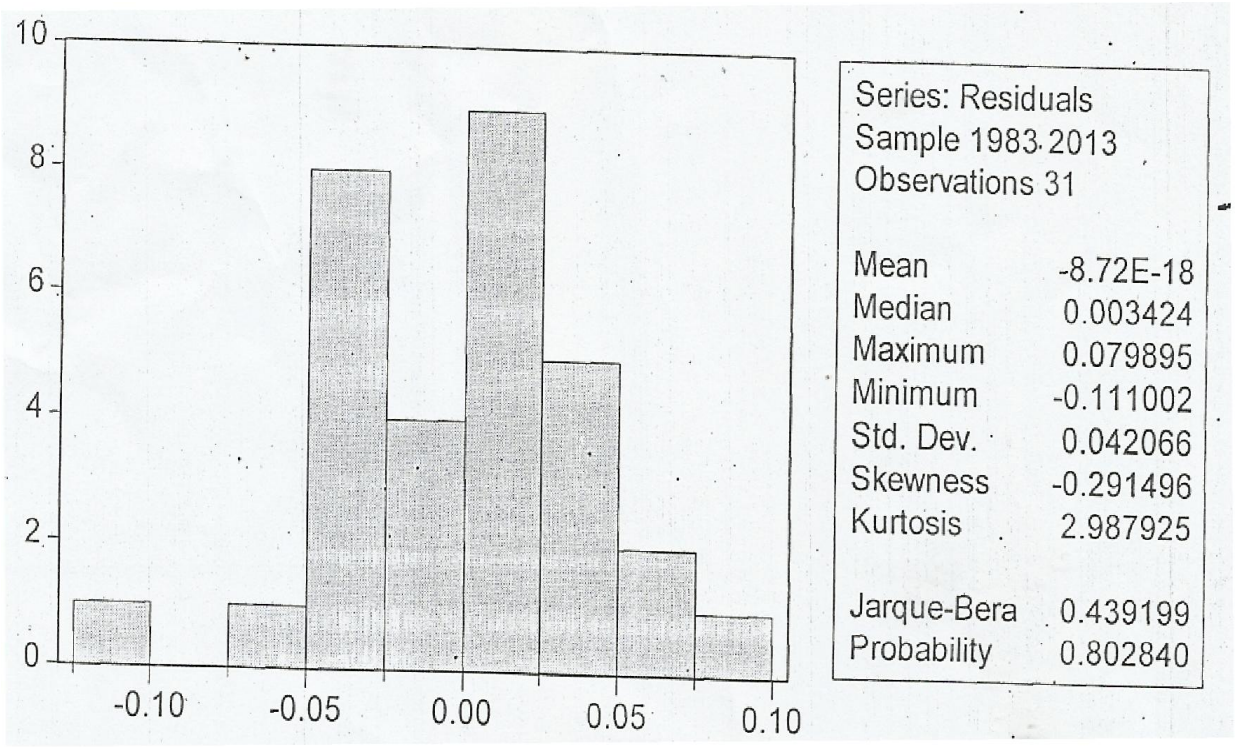
Appendix xvi: Summary of Parsimonious Result

Dependent Variable: DLGRGDP
Method: Least Squares
Date: 06/11/15 Time: 12:34
Sample(adjusted): 1983 2013
Included observations: 31 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLGSLM(-1)	0.046777	0.017156	2.726589	0.0118
DLGEOR	0.174436	0.086412	2.018652	0.0559
DLGEHE	0.525107	0.155080	3.386038	0.0025
DLGEEG(-1)	0.181737	0.076316	2.381369	0.0221
DLGEED(-2)	0.243388	0.060003	4.056269	0.0002
ECM(-1)	-0.212884	0.092381	-2.304399	0.0302
C	0.064734	0.011797	5.487321	0.0000

R-squared	0.649978	Mean dependent var	0.049514
Adjusted R-squared	0.602473	S.D. dependent var	0.048573
S.E. of regression	0.047031	Akaike info criterion	-3.080330
Sum squared resid	0.053086	Schwarz criterion	-2.756527
Log likelihood	54.74512	F-statistic	31.33179
Durbin-Watson stat	2.123195	Prob(F-statistic)	0.000000

Appendix xvii: Jargue Bera Bar Chart



Appendix xviii: Breusch-Godfrey Serial Correlation LM Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.689699	Probability	0.512251
Obs*R-squared	1.829018	Probability	0.400713

Test Equation:
Dependent Variable: RESID
Method: Least Squares
Date: 06/11/15 Time: 12:35
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DLGSLM(-1)	0.007924	0.020026	0.395684	0.6961
DLGEOR	-0.001407	0.016794	-0.083768	0.9340
DLGEHE	-0.005438	0.012004	-0.453059	0.6549
DLGEEG(-1)	0.002707	0.019018	0.142333	0.8881
DLGEED(-2)	0.001848	0.007414	0.249190	0.8055
ECM(-1)	-0.049295	0.109879	-0.448630	0.6581
C	-0.002580	0.012303	-0.209676	0.8359
RESID(-1)	0.290487	0.265083	1.095833	0.2850
RESID(-2)	-0.109439	0.221076	-0.495028	0.6255

R-squared	0.059001	Mean dependent var	-8.72E-18
Adjusted R-squared	-0.283181	S.D. dependent var	0.042066
S.E. of regression	0.047651	Akaike info criterion	-3.012111
Sum squared resid	0.049954	Schwarz criterion	-2.595792
Log likelihood	55.68771	F-statistic	0.172425
Durbin-Watson stat	1.741404	Prob(F-statistic)	0.992485

Appendix xix: White Heteroskedasticity Test

White Heteroskedasticity Test:

F-statistic	1.689053	Probability	0.152685
Obs*R-squared	16.41887	Probability	0.172795

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 06/11/15 Time: 12:36
Sample: 1983 2013
Included observations: 31

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.000947	0.000785	1.205318	0.2437
DLGSLM(-1)	0.001455	0.000826	1.760670	0.0953
DLGSLM(-1)^2	0.000803	0.000473	1.696499	0.1070
DLGEOR	0.000228	0.001083	0.210717	0.8355
DLGEOR^2	0.003635	0.001384	2.627505	0.0171
DLGEHE	-0.000713	0.000613	-1.163504	0.2598
DLGEHE^2	-0.000543	0.000240	-2.259127	0.0365
DLGEEG(-1)	-0.002331	0.001436	-1.623043	0.1220
DLGEEG(-1)^2	-0.000757	0.001465	-0.516781	0.6116
DLGEED(-2)	0.000331	0.000339	0.977063	0.3415
DLGEED(-2)^2	-8.28E-05	0.000180	-0.461140	0.6502
ECM(-1)	-0.008214	0.006134	-1.339208	0.1972
ECM(-1)^2	-0.022938	0.014569	-1.574468	0.1328

R-squared	0.529641	Mean dependent var	0.001712
Adjusted R-squared	0.216068	S.D. dependent var	0.002454
S.E. of regression	0.002173	Akaike info criterion	-9.130221
Sum squared resid	8.50E-05	Schwarz criterion	-8.528871
Log likelihood	154.5184	F-statistic	1.689053
Durbin-Watson stat	1.442694	Prob(F-statistic)	0.152685

Appendix xx: Summary of Diagnostic Checks Result.

Diagnostic Checks

The diagnostic checks include the Jarque-bera normality test used to test whether the residuals are normally distributed or not. The Breusch-Godfrey Serial correlation to language multiplier (LM) test was used to test if the residuals are serially correlated. The white heteroskedasticity test is used to test whether the residuals are homoskedastic. The Cumulative Sum of Recursive Residual (Cusum) and the Cumulative Sum of Squares of Recursive Residuals (CUSUMQ) tests will be used to test for the residual stability. The summary of the diagnostic tests are shown in table and figure below:

Jarque – bera Normality test			
Jarque – bera	0.44	Probability	0.80
Breusch – Godfrey Serial Correlation LM test			
F-statistic	0.69	Probability	0.51
White Heteroskedasticity test			
F-statistic	1.69	Probability	0.15

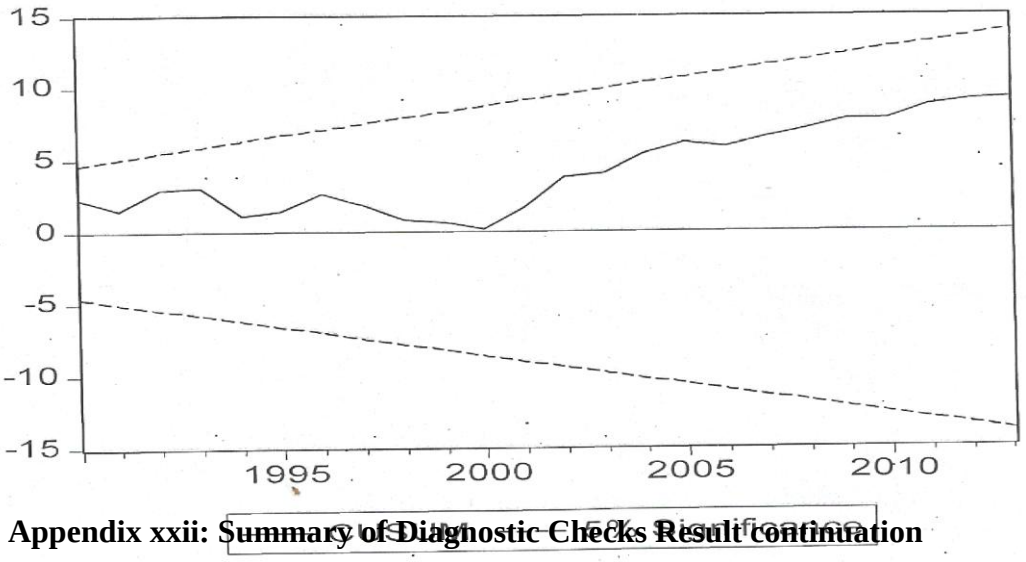
Appendix xxi: Summary of Diagnostic Checks Result continuation

The result of the Jarque-bera normality test indicates that the residuals are normally distributed. The result of the Breusch-Godfrey Serial Correlation LM test indicates that the

residuals are not serially correlated. The result of the white heteroskedasticity test indicates that the residuals are hommoskedastic. That is, the residuals have a constant variance.

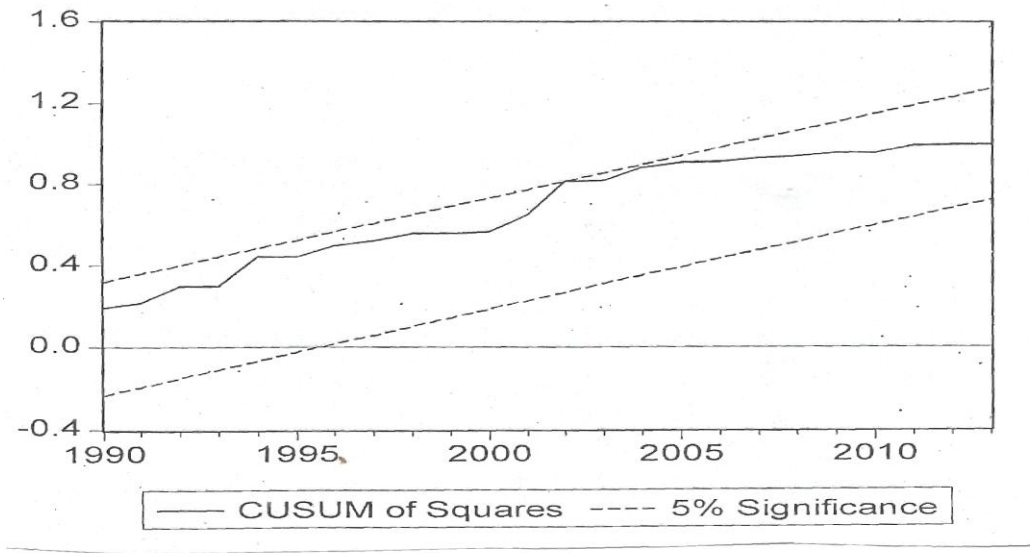
The result of the CUSUM and CUSUMQ test are shown in figures below:

CUSUM stability test



Appendix xxii: Summary of Diagnostic Checks Result continuation

CUSUMQ stability test



The result of both the CUSUM and CUSUMQ stability test indicates residual stability.

Appendix xxiii: Variance Decomposition Test.

Cholesky Variance Decomposition

The result of the cholesky variance decomposition is shown in the table shown below:

Table: Summary of Cholesky Variance Decomposition Result

Variance Decomposition of LGRGDP

Period	S.E.	LGRGDP	LGSLM	LGEOR	LGEHE	LGEEG	LGEED
1	0.041400	100.0000	0.000000	0.000000	0.000000	0.000000	0.000000
2	0.078424	92.44919	3.917821	0.571667	1.283365	1.523540	0.254413
3	0.110115	92.77167	3.456871	0.444275	0.833781	2.017970	0.475434
4	0.135514	92.32429	2.793143	0.455476	1.033199	2.645842	0.748052
5	0.158620	92.52381	2.618722	0.420475	0.943115	2.777017	0.716859
6	0.179378	92.71513	2.779715	0.400677	0.905521	2.510423	0.688533
7	0.198703	92.95034	2.822478	0.386311	0.841734	2.341032	0.658107
8	0.216737	92.94721	2.868303	0.411458	0.832471	2.296908	0.643650
9	0.233629	93.01499	2.873121	0.416269	0.806114	2.273976	0.615533
10	0.249465	93.03423	2.882763	0.429578	0.794396	2.256756	0.602273

Variance Decomposition of LGSLM:

Period	S.E.	LGRGDP	LGSLM	LGEOR	LGEHE	LGEEG	LGEED
1	0.763764	3.194430	96.80557	0.000000	0.000000	0.000000	0.000000
2	1.008141	3.734994	73.38113	1.669442	1.874312	13.55556	5.784559
3	1.193534	8.406493	72.29781	2.522166	1.449057	10.16173	5.162745
4	1.346314	11.86597	71.42732	2.032776	1.149142	8.245384	5.279408
5	1.451083	14.57747	69.63402	1.749954	1.178846	7.103001	5.756708
6	1.558109	16.04705	69.20027	1.861107	1.035558	6.281303	5.574711
7	1.646955	17.13728	68.91379	1.700918	1.010525	5.623566	5.613924
8	1.733498	17.78999	68.93546	1.586656	0.970560	5.090759	5.626569
9	1.823326	18.32507	68.96819	1.507714	0.935151	4.608198	5.655676
10	1.906962	18.85612	68.90150	1.423911	0.909758	4.226250	5.682460

Variance Decomposition of LGEOR:

Period	S.E.	LGRGDP	LGSLM	LGEOR	LGEHE	LGEEG	LGEED
1	0.654726	2.437388	0.615034	96.94758	0.000000	0.000000	0.000000
2	0.877893	6.724389	0.342587	92.17965	0.042022	0.625213	0.086135
3	1.041148	13.89175	1.534324	81.24006	0.176981	2.569755	0.587124
4	1.243123	18.19143	2.509581	75.71841	0.125725	2.620237	0.834618
5	1.422095	21.97624	2.259863	72.66318	0.102893	2.133751	0.864065
6	1.577965	24.49401	2.129263	70.70376	0.086599	1.741722	0.844642
7	1.722237	26.26281	2.065532	69.21014	0.074212	1.491982	0.895330
8	1.857339	27.38671	2.000783	68.32650	0.064130	1.342567	0.879301
9	1.980406	28.29353	1.950892	67.60829	0.056951	1.223279	0.867059
10	2.097709	28.96041	1.943460	67.03102	0.051054	1.140760	0.873299

Variance Decomposition of LGEHE:

Appendix xxiv: Variance Decomposition Test Continuation

Variance Decomposition of LGEHE:

Period	S.E.	LGRGDP	LGSLM	LGEOR	LGEHE	LGEEG	LGEED
1	0.683805	0.648442	36.63095	25.48787	37.23274	0.000000	0.000000
2	0.907232	10.53829	26.34665	27.74097	22.46796	3.838200	9.067926
3	1.099208	7.688982	23.29395	20.43501	28.97266	2.767383	16.84201
4	1.184506	8.883941	26.04397	17.75559	28.63610	2.652675	16.02772
5	1.321969	9.343170	27.97815	14.33204	28.05419	3.988994	16.30345
6	1.430693	10.62663	28.44366	13.36329	27.11512	3.782153	16.66915
7	1.536471	11.16658	29.56231	11.70472	27.46419	3.502611	16.59959
8	1.626340	12.23945	30.11759	10.63336	27.16646	3.393891	16.44925
9	1.719422	12.81890	30.39353	9.694588	27.17771	3.229914	16.68536
10	1.802262	13.35641	30.66583	9.041684	27.11638	3.079704	16.73999

Variance Decomposition of LGEEG:

Period	S.E.	LGRGDP	LGSLM	LGEOR	LGEHE	LGEEG	LGEED
1	0.478128	0.654120	3.393423	0.964465	1.666133	93.32186	0.000000
2	0.820566	0.863918	8.129649	3.409097	0.691912	81.50017	5.405253
3	1.060512	0.517227	10.99292	3.390065	0.809571	79.24102	5.049206
4	1.284043	1.084136	13.26328	2.450510	0.560323	79.15303	3.488721
5	1.473025	2.133139	15.77215	1.883099	0.502301	76.78645	2.922860
6	1.607633	3.266864	16.34598	1.886263	0.435974	75.38231	2.682607
7	1.721631	3.972192	17.10248	1.667358	0.462526	74.24127	2.554169
8	1.831323	4.573893	17.46139	1.509442	0.431751	73.60344	2.420087
9	1.939356	4.917794	17.68117	1.396161	0.418775	73.21074	2.375353
10	2.041875	5.183387	17.93132	1.308943	0.400120	72.87456	2.301671

Variance Decomposition of LGEED:

Period	S.E.	LGRGDP	LGSLM	LGEOR	LGEHE	LGEEG	LGEED
1	1.036686	3.993959	14.05822	9.924498	6.084176	6.926073	59.01308
2	1.225186	4.708747	10.10891	17.20465	11.69434	10.48086	45.80249
3	1.292503	4.667398	13.48954	16.31288	12.80033	11.54131	41.18855
4	1.383977	6.202813	11.76574	17.59465	13.92142	10.24635	40.26904
5	1.547493	5.635390	9.606088	17.03115	16.03240	14.80036	36.89462
6	1.625792	5.494850	8.800819	16.85788	17.50548	16.29173	35.04924
7	1.691801	5.461297	8.173087	16.82406	18.62915	15.95294	34.95947
8	1.772924	5.189345	7.507675	17.37684	19.42236	15.74974	34.75404
9	1.838133	4.989166	7.000592	17.73051	20.33615	15.60392	34.33966
10	1.895545	4.942781	6.584932	17.89813	21.13129	15.38232	34.06054

Cholesky Ordering: LRGDP LGSLM LGEOR LGEHE LGEEG LGEED

Appendix xxv: Variance Decomposition Test Continuation

The result of the variance decomposition indicates that shocks to Real Gross Domestic Product explained 100 percent of changes to itself in the first period. This reduced to 93 percent in the last period. Shocks to the government expenditure on solid mineral explained about 4 percent of changes in the level of economic growth in the second period which reduced to 3 percent in the last period. The result indicates further that shocks to government expenditure on oil refinery, explained about 1 percent of the changes in the level of economic growth. An indication of the mismanagement of the money spent by government on the Turn Around Maintainance of the refineries. The result indicates further that a shocks to government expenditure on health explained about 1 percent of the charges in economic growth. This did not change in most of the study period insinuating flaws in health expenditure management. The result indicates that shocks to government expenditure on electricity generation explained about 2 percent of the total changes in the level of economic growth. This increased to 3 percent in the 6^{th} period. Shocks to Government expenditure on education explained about 1 percent of the total changes in the level of economic growth. This did not change throughout the study period. Shocks to economic growth explained about 3 percent to the level of government expenditure on solid minerals. This increased to about 19 percent in the last period. Shocks to economic growth explained about 2 percent of government expenditure on oil refineries. This increased to 28 percent in the last period. Shocks to economic growth explained about 1 percent of changes in government expenditure on health in the second period. This increased to 13 percent in the last period. Shocks to economic growth explained about 1 percent on government expenditure on electricity generation in the first period. This increased to 5 percent in the last period. Shocks to economic growth explained about 4 percent of changes in government expenditure in education in the first period. This increased to 5 percent in the last period.

Appendix xxvi :Value of the Variables for the Period Under Review

obs	GSLM	GEOR	GEHE	GEEG	GEED	RGDP
1980	2210.000	16.60000	109.5000	375.0000	467.0000	31546.80
1981	312.0000	18.10000	72.00000	340.3000	358.3000	205222.1
1982	385.0000	27.20000	87.50000	258.0000	1358.300	199685.3
1983	430.0000	92.40000	155.3000	383.0000	8356.600	185598.4
1984	1567.000	50.70000	119.8000	429.1000	973.5000	183563.0
1985	1933.000	63.70000	155.8000	362.4000	1020.000	201036.3
1986	2561.000	111.9000	143.6000	429.5000	1115.100	205971.4
1987	2991.000	180.0000	139.1000	523.0000	2564.400	204806.5
1988	2876.000	189.5000	167.7000	662.0000	1586.900	219875.6
1989	2779.000	261.1000	279.2000	670.0000	1509.000	236729.6
1990	14850.00	512.1000	166.9000	554.6000	6578.500	267550.0
1991	13926.00	332.1000	266.0000	342.8000	6915.600	265379.1
1992	15745.00	214.8000	326.0000	203.2000	13835.20	271365.5
1993	107873.0	397.1000	401.1000	435.4000	17722.10	274833.3
1994	9589.000	418.2000	312.0000	247.4000	1324.000	275450.0
1995	12074.00	319.6000	188.0000	324.2000	20442.00	281407.4
1996	11697.00	494.0000	352.9000	551.4000	58407.00	293745.4
1997	12127.00	348.0000	961.0000	2152.000	41000.00	302022.5
1998	13809.00	137.6000	725.2000	4363.100	55000.00	310890.1
1999	12069.00	521.6000	3192.000	4636.300	56000.00	312183.5
2000	107795.0	265.5000	319.2000	2583.300	56000.00	329178.7
2001	16168.00	136.2000	4860.500	4082.100	66000.00	356994.3
2002	15437.00	313.5000	8793.200	4227.800	16300.00	433203.5
2003	14859.00	402.3000	11612.60	5022.300	100000.0	477533.0
2004	14662.00	569.7000	2453.500	5349.000	1555424.	527576.0
2005	13882.00	1838.800	50563.20	23006.10	203902.9	561931.4
2006	13980.00	7062.700	33254.50	23327.50	363363.0	595821.6
2007	14040.00	11072.20	34198.50	29163.30	397315.2	634251.1
2008	13089.00	13572.40	27440.80	24072.20	41203.20	672202.6
2009	13537.00	14027.40	35791.80	19492.90	431201.0	718977.3
2010	14012.00	28154.60	38273.40	24822.90	583647.4	775525.7
2011	14629.00	57637.20	40177.90	28008.60	619374.8	834000.8
2012	15427.00	60088.70	42291.80	95046.10	662193.3	888893.0
2013	20164.00	63547.20	48036.40	95002.50	719384.7	926757.6

Appendix xxvii: Graphical Representation of the Movement of Variables