NEAR EAST UNIVERSITY
GRADUATE SCHOOL OF SOCIAL SCIENCES
DEPARTMENT OF ECONOMICS

THE EFFECTS OF BUDGET DEFICIT ON ECONOMIC GROWTH AND ITS IMPACT ON CURRENT ACCOUNT BALANCE IN NIGERIA: AN ARDL APPROACH

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AMINU SALISU

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Prepared by Aminu Salisu

20124842

We certify the thesis is satisfactory for the award of the degree of Master of Science in Economics

Examining Committee:

Assoc. Prof. Dr. Hüseyin Özdeşer	Committee Chairman and Chairman, Department of Economics, Near East University.
Asst. Prof. Dr. Ergin Akalpler	Supervisor, Department of Economics, Near East University.
Asst. Prof. Ahmet Ertugan	Near East University.

Approval of the Graduate School of Social Science

PROF. DR. ÇELİK ARUOBA/DR. MUHİTTİN ÖZSAĞLAM

Director/Asst. Director.

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I hereby declare that all information in this document has been obtained and presented in accordance with rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results to this work.

Name, Surname: AMINU SALISU

Signature:

Date:

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DEDICATION

I dedicated this work to my parents and my loving family.

ABSTRACT

This study examined the effect of budget deficits on the Gross domestic product and its impact on current account balance in Nigeria, from 1981 – 2013, the study employed Autoregressive Distributed Lag Approach (ARDL), this study used Augmented Dickey Fuller (ADF) and Phillip-Perron test (PP) to check the presence of unit root and found out that all the variables are stationary at level except Real Effective exchange rate was stationary at first differencing; they are I (0) and I (1). we also used bound test to check the cointegration of the model equations the first model equation show the cointegration, which reveal the presence of long run relationship between economic growth and other selected macroeconomic variables (Current account balance, interest rate, real effective exchange rate and government budget balance). The main aim of the study was to examine the response of macroeconomic variables to the effect of budget deficit, on economic growth performance and to investigate the long run effects, also the impact of budget deficit on current account balance in Nigeria, the course of action was the need to sustain macroeconomic stability through effective and efficient domestic policies and external policies and to curb out the effect of slipping down of oil price which is being felt around the world Nigeria need to revise its fiscal operations to reflect current and future trend that promote sustainable growth and development, and then to strengthening coordination between monetary and fiscal policies.

Keywords: Budget deficit, ARDL Approach to cointegration, Economic growth, Current account balance.

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LIST OF ABBREVIATIONS

ARDL	Autoregressive Distributed Lag
CAB	Current Account Balance
CBN	Central Bank of Nigeria
ECM	Error Correction Model
GBB	Government Budget Balance
GCF	Gross Capital Formation
GDP	Gross Domestic Product
GDS	Gross Domestic Saving
GFCF	Gross Fixed Capital Formation
IDA	International Development Agency
IMF	International Monetary Fund
LCU	Local Currency Unit
NFA	Net Foreign Asset
NFF	Net Financial Flow
NFL	Net Financial Liabilities

CHAPTER ONE

GENERAL INTRODUCTION

1.1 Introduction

Government as an agent of people has to fulfill its primary role of providing social and infrastructural amenities, education, employment, adequate health services and good roads. In discharging these responsibilities, government need to measure its revenue and expenditure sources. According to Black Budget constitutes the cardinal tool of fiscal policy. Thus, these expansionary measures exercise control over the size and relationship of government receipts and expenditures (Jhingan) generally, Economists and policy makers agreed upon that to achieve sustainable economic growth of a country balanced budget is not only important but necessary and sustained economic growth is possible only within a vibrant macro- economic interactions, with such interactions fiscal policy or monetary policy play a key role. In Nigeria annual budgetary system remain a tool through which government Macroeconomic policies are channeled. Thus, government regulates economic affairs by maintaining broad macroeconomic goals (Jhingan, 2010) which includes full employment, prices stability, economic growth and balance of payments which is designed to achieve through certain instruments of monetary and fiscal policies.

Moreover, huge fiscal deficit overtime results in ineffective macroeconomic performance in Nigeria. Debt overhang in the last three decades of the research study. Various fiscal reforms were, therefore, undertaken to address these issues. For example, National development plans, the structural adjustment programs SAP (1982 – 1985) the Austerity measures 1984 – 1985, the Rolling plan, the National economic empowerments and development strategy (NEEDS) the vision 20, 20:20. All measures are taken to revive the

economy and attain long term growth prospect of the economy. Autoregressive Distributed Lag (ARDL) approach is employed to analyze the consequences of budget deficit on the performance of growth of economy and its impact on current account balance in Nigeria, which remain the main focal point of the research study.

1.2 Background of the Study

A blessed country with teeming population both human and material resources, Nigeria has a total population of about 171 million people (Unicef, 2014).[1] Initially, agriculture is the mainstay of the economy but varieties of mineral deposit coupled with the abundance of oil in commercial quantity, the country solely depends on crude oil exportation which is surrounded by uncertainties. About 85% of its revenue is derived from such exportation, with the thriving of the uncertainties the impact continues to experience by the economy. Evidently, the second half of 2012 experienced the financial global crisis which reduced the productivity. According to CBN (2012)[2] on the other hand, the Nigerian government annual budget continues to exhibit excessive deficit every year, and the fear of the future of the Nigerian economy, become much more of greater concern. The 2012 annual Federal government budget was framed based on the fears of a double-dip recession (BOF, 2012).[3]

However, with estimated two million barrels per day supplied, despite that the income per capita in the country was very low and still Nigeria regarded with low level of economic growth, the adoption of reform policies by various regimes to fine-tune the economy the problems persists, hence necessitate the need to revisit the linkage of domestic activities and foreign sector linkages.

1.3 Statement of the Research Problems

The fiscal operation in Nigeria from 1981 to 2013 within the research study period is characterized by huge deficit, basically expansionary fiscal measures are intended to stimulate the growth of the economy during business cycle. The economy exhibits misfortune with drastic fall in standard of living, the increasing indebtedness of the country with unfavorable balance of payment derive largely from public debt (both

[1] www.Unicef.org:Nigeria Country programme document 2014-2017
[2] Central Bank of Nigeria: Financial Stability Report, December 2012
[3] www.budgetoffice.gov.ng:presentation of 2012 budget.

domestic and foreign) persistent rise in prices and the increase reliance on global economies etc.

The above indicators exhibit adverse effect on macro variables, and the significance of deficit budgeting to effect growth remains questionable. Thus, the budget deficit continues to treating business confidence and investments in Nigeria. Usually are we to agree the Keynesian assertion that expansionary fiscal policy crows-in private investment henceforth, for Neoclassical and Ricardian economist, the former maintained that private investment crowds-out via its effect on interest and other variables, while the latter are of the view that neither positive nor negative influence it has on aggregate demand?

This study period cover a timeframe from 1981-2013. First, the choice of the period is that, Nigeria experiencing excessive deficit, second to capture the change of policy regimes implemented by the federal Government. And third, the long period is to allow for a better degree of freedom. These are what the research study is meant to address.

1.4 Research Questions

The following questions guide the research:

- How does budget deficit affect Macro-economic performance of the Nigerian economy?
- How does budget deficit cause current account imbalance in Nigeria?

The outcomes of the research would provide an insight and understanding.

1.5 Aims and Objectives of the Study

The main aims of the present study are:

- To examine the response of macroeconomic variables to the effect of budget deficit.
- To investigate the long run effects of budget deficit on Gross domestic product
- To identify among others the significance of current account balance in Nigeria as a result of expansionary fiscal measures

1.6 Significance of the Study

The research study will add value to the existing literature on budget deficits, within the life span of thirty years it attempt to empirically investigate the significance of budget deficit. Previous researches have revealed that there are conflicting views of the budget deficit. This study will be instrumental in evaluating the merits of these views. Beyond its academic contribution, this study has policy implications as its results can be utilized by policy makers to make informed decisions with respect to the budget deficit.

To the students as a research stuffs and of immense importance to the theoretical explanations given by different scholars and as a guide prescription to the policy makers long term objectives of government to realize its objective of inclusive growth and the attainment of vision 20:2020 successfully in Nigeria.

1.7 Scope and Limitation of the Study

The research study cover the federal government of Nigeria fiscal operations from 1981 to 2013. Quantitative data will be utilized with relevant qualitative information based on macroeconomic data from the study period. The variables used in this study such as government budget balance, current account balance, gross domestic product, interest rate, and real effective exchange rate are macroeconomic variables, and can only obtain data for these variables, as is usually the case when studying economy, is through some governmental agencies the data provided by these agencies are not under the control of the researcher. Therefore, the accuracy of the data and the methodologies used in their calculations and presentations are not assumed to be consistent and obtained with the highest scientific rigor. Any deviation from this assumption would be considered as an uncontrolled limitation to this study. Despite these shortcomings that does not nullify the validity and reliability of the conclusions that is attained in this work, rather only serve as an avenue for improvement.

1.8 Plan of the Study

The research study will take the following form:

Chapter One comprises introduction to the general aspects of the research study, the background of the study, introduction to the statement of the research problems, research questions, aims and objectives of the study, the study significance, scope and limitations of the study and the plan of the study. Theoretical and conceptual framework will be discussed in chapter two. In Chapter Three available literature related to the study will be reviewed. Chapter Four explains method of data collection, model specification, data presentation and analysis. Chapter Five will summarize, conclude and make recommendation for further studies on the entire research

CHAPTER TWO

THEORETICAL AND CONCEPTUAL FRAMEWORK

2.1 Introduction

This chapter design to highlight the explanations given by scholars related to the research and the main contextual meaning of the subject of study, the linkage between current account and budget deficit as well as the adjustment of different variables such as domestic investment and saving, interest rate and exchange rates, to change in fiscal policy. A budget system that function well is crucial to developing sustainable fiscal policy and economic growth but the Nigerian Government annual budget are exacerbated by weak budget and faulty process, given its direct bearing to the peoples', due to this inconsistency the focus of budget has shifted from the broad objectives to that of how to generate receipts to bring about fiscal balance.

2.2 Conceptual Definition

There is no single definition of budget deficit generally agreed upon among scholars, but scholars provided different interpretation based on their understanding of the subject matter in their field of research. Therefore, the concept of a fiscal (budget) deficit is in principle, simple enough: it basically represents the difference between the government's normal income from taxes and revenue based and expenditure, The term budget deficit to the researcher's understanding and based on the Nigeria budget deficit, is simply refer to the excess of federal government total expenditure over its federal government retain revenue in the fiscal year.

2.2.1 The Neoclassical School

According to the school of neoclassical thought the main controversy put forward was the interplay between expansionary fiscal measure and macroeconomic variables, They

disposed that raising rate of interest as a result of fiscal expansion lead to disincentive effect on the growth of bonds, spending of private individuals and investment, the resultant inflationary level, the crowding out of resources supplement by the deficit effects on current account sluggish the growth of the economy. Hence, According to Yellen (1989) reject the school assertion that optimum resources utilization, constant output, and fully utilized resources, thus the over stretching of other components supplement the decrease in other components, hence investment and/or net export must be an inverse to growth rate of net export "fully crowding out". Further, going by this analysis as government demand expands this contract the private sector in form of fall in investment, consumption by increase resources from government, "crowding out".

The Neoclassical model of Budget deficit has three central theme (a) no stock-flow specification of the capital account of payments; (b) non reflection of wealth effects; and(c) The demand side of the macro economy with fixed prices and wages remain focus and restricted. (Bernheim)[4]

2.2.2 Classical School

The view of Classical economist hold that, government budget need to always be balanced and prescribe as a rule, whereas deficit budget would be a burden to the society in present time and future. Government has limited role in the economy, as such government can raise the necessary funds for its operations with these two legitimate principal methods which are: tax and deficit (debt) finance. Was neither an "all tax" nor an "all debt" as Nicholas put it; "but he preferred exclusive tax finance during 'normal' periods because of the future tax burdens placed on the economy even by partial debt finance". He was mainly concerned, in fact, to show how increase in government spending would lead to some rather unpleasant welfare effects for the economy if debt finance of the new spending played too heavy a role.

[4]B. Douglas Bernheim, "A Neoclassical Perspective on Budget Deficits"**, Journal of Economic Perspectives**, v.3, no.2 (1989):57.

2.2.3 The Standard view of Budget Deficits

According to the standard model presumed that in a closed economy, replacing expansionary fiscal measures lead to the growth of an economy by expanding aggregate consumption both real rate have to rise to equate national income identity of saving and investment and in the long run productive capital fall as a smaller stock (TAŞ)[5]. This view hold that deficit is the shortfall in a specific budget covered by loan in form of Treasury note issued by government agencies to curtail the instant deficit or the increase in tax rate as short term stimulus would generate revenue and bring down deficit, but these action might hurt consumer and investor confidence which can sluggish the economy growth in term of output produce.

2.2.4 The Ricardian School

David Ricardo hold a contrary view on Budget deficit approach, however Robert J Barro developed the approach to Ricardian Equivalence Hypothesis in (1989) To Ricardian view cutting current taxes to finance deficits lead to higher future taxes government has an intertemporal budget constraint, compliment people's desire to save for their future generation. This rationality put forward by the school financing deficit with current tax cut for expanding government spending, have the same effect in future (TAŞ). Hence, current account balance is completely independent of the fiscal balance.

Ricardian Equivalence Hypothesis (REH) or the Barro-Ricardo equivalence proposition, hold that Government expansionary fiscal measures do not have any effect on the economy, it is a difference of time between doing now and deferring to do latter, as such neither positive nor negative effect exerted.

2.2.5 The Keynesian School

To the Keynesian school the thought advocated that government expansionary fiscal measures will exert positive response coupled with the growth of domestic production, rise in aggregate demand, rise in saving, private investment level at the given rate of interest, is the resultant effect of expansionary fiscal measure. The increase demand by

[5] Ramazan TAŞ, "Theoretical and Empirical Aspects of Budget Deficit", **Ankara University**, (1992):327.

domestic economy necessitate the expansion of the external sector than any disequilibria from either side can generate either surplus or deficit according to absorptive theory. In another direction, Mundell-flemming assert that interest rate and expansionary fiscal policy the former determine the external sector while the latter determine the internal sector their interactions can determine the flow of income which might cause imbalance in the current account.to the Keynes the measures have "Crowding-in" effect which lead to expansion of domestic aggregate demand.

As Eisner (1989) implied that with expansionary measure of fiscal policy stimulate economic activities by raising the productivity through increased investment and saving thus "the measure crowding-in rather than crowded-out investment".

With these contrasting views and approaches in the literature generally agreed upon that a sound macroeconomic policy was critical to any successful development process aimed at achieving the high employment, sustainable economic growth, price stability, long-viability of the balance of payment and external equilibrium.

2.3 Current Account

The Current account deals with payments and receipts for currently produced goods and services. It consists of two main accounts. The visible trade account (balance of trade) and the invisible trade account. The trade balance can be surplus or deficit between exports and imports (IMF 2002).[6] The difference between the two accounts will determine whether there will be a deficit or surplus in the current account.

2.3.1 Components of Current Account

Consists the items that make up the exports and imports it is the statement that describe the disequilibria with international payment system. (IMF 1993)[7]

- **Trade Balance:** This refers to overall exports and imports of goods.
- **Income balance Net**: it is the net payment made to non-residents and employee compensation.

[6] International Monetary Fund (Balance of Payment Statistics), Yearbook (Washington, 2002).
[7] International Monetary Fund, "Balance of Payment Manual" IMF Manual 5th Ed. (1993)

- **Net service balance**: refers to the aggregate transaction made of imports and exports of service sectors.
- **Current transfer**: refers to aggregation of all official and private transfers with nothing received in return
- **Current account balance** (CAB) refers to the net incomes, current transfers net and export of goods and services net, It can be expressed as follows (Jhingan, 2010):

$$GDP = C + G + I + X - M$$

$$S = I + CAB$$

$$S - I = CAB$$

($X - M$) = balance on goods and services in the balance of payments)

From the components the saving and investment identity reflect a country stance to the growth of deficit in the current account or increased foreign asset net, the overall measures can determine the international indebtedness.

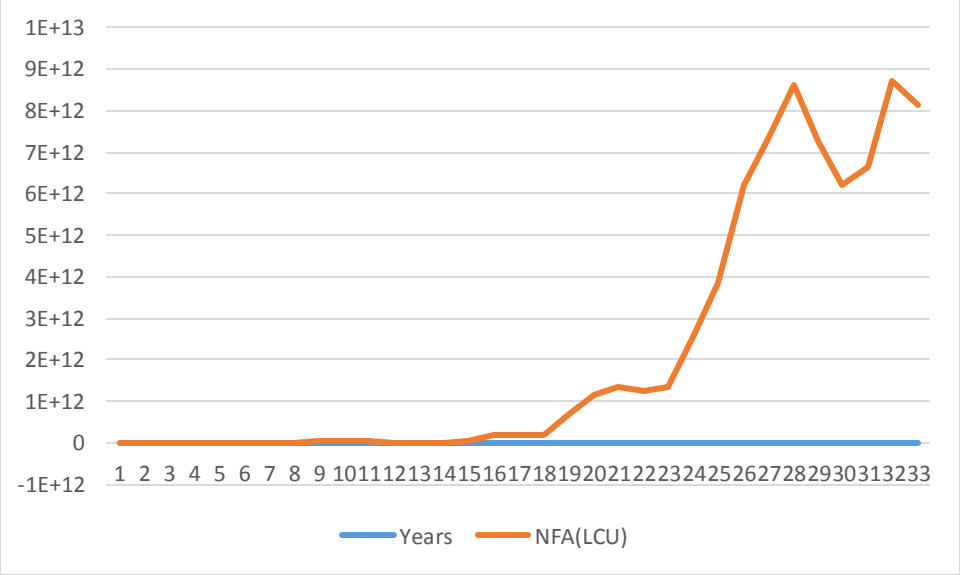

Figure 1: Net Foreign Asset (Local Currency Unit)

The aggregate of foreign assets held by monetary authorities and deposit money banks, less their liabilities are Net Foreign assets (NFA).

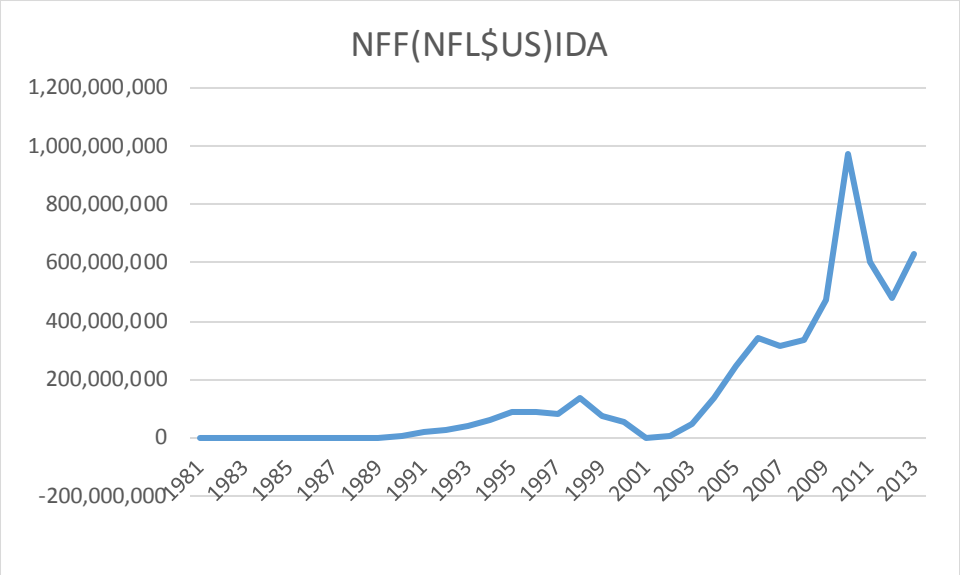

Figure 2: Net Financial Flow (Net Foreign Liabilities US$) the flows of net finance received by the borrower during the year are disbursement of loans and credit less repayments of principal

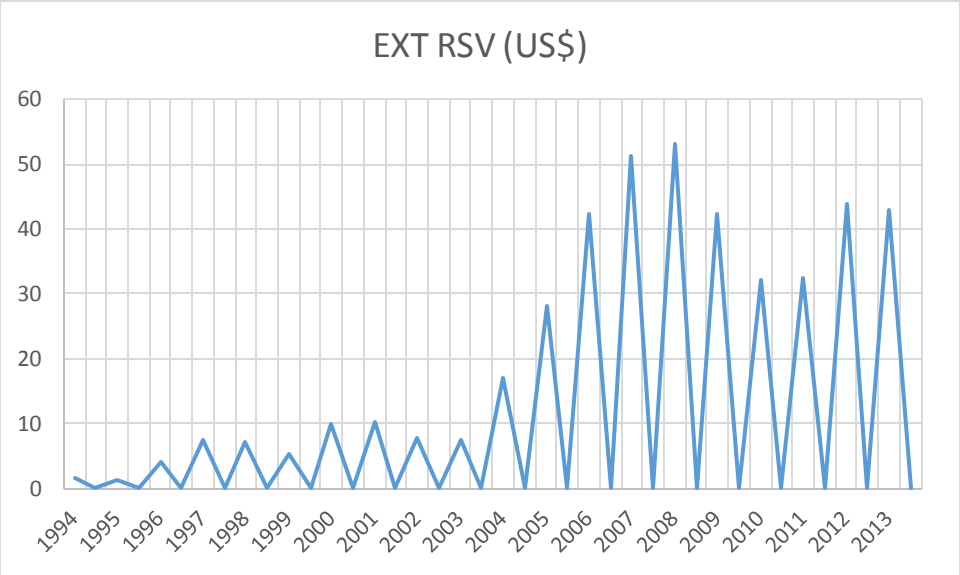

Figure 3: External Reserve (US $) Foreign currency deposit held by Central Bank of Nigeria

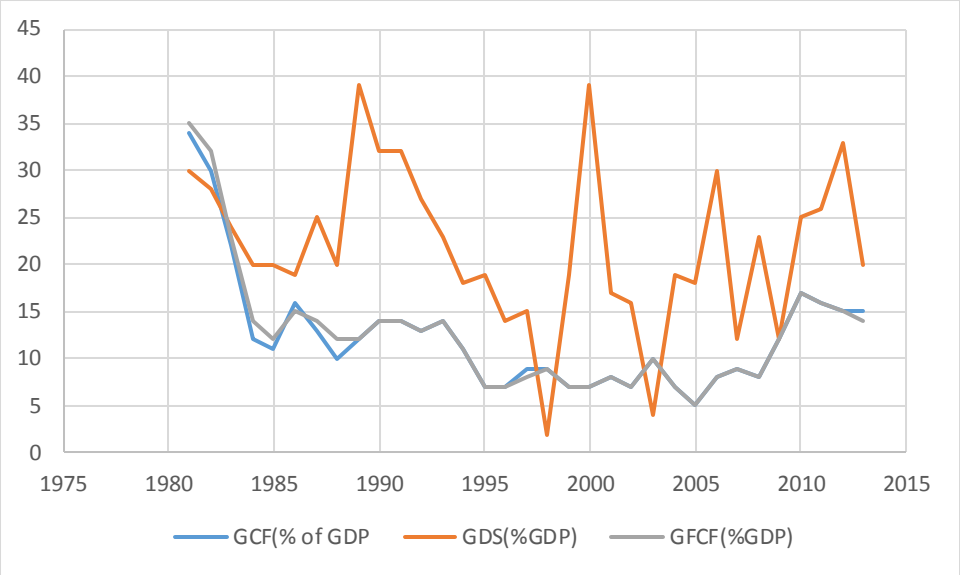

Figure 4: GCF%GDP, GDS%GDP, and GFCF%GDP Gross domestic savings are calculated as GDP less final consumption expenditure (total consumption)

2.4 Overview of the Budget Structure and Fiscal Trend in Nigeria

The budget structure in Nigeria consists of the following:

- Government Revenue and
- Government Expenditure

The Government Revenue derived from a number of sources, these include.

- **Oil Revenue and non- Oil Revenue**
- **Oil Revenue**

(Oil and gas revenues) A share of 48.5% accrues to the Federal Government's Budget

- **Non- Oil Revenue**
- *Customs 48.5% accrues to Federal Government's Budget*
- *Companies Income Tax*
- *Value Added Tax 14% of the VAT pool accrues to the Federal Government's Budget*
- *Share of Federation Account Levies*

Federal Government Independent Revenues: 100% Accrues

Others (Including Unspent balance and share of Special Accounts

- **The Expenditure**
- **The Capital Expenditures**

There are several objectives or aims which the government wants to achieve by spending on different items. In Nigeria the Capital and Recurrent expenditure consists the followings: These are expenditure on projects which are of a permanent nature, the building of schools, roads, bridges, dams, hospitals and other permanent investments, capital spending are as follows: 25.6% in 2011 to 28.5% in 2012 (BOF, 2012)[8]

The Recurrent Expenditure

- These are expenses which are repeated yearly, they are not permanent, such expenditure includes

Administration, Social and Community Services, Economic Services, Transfers etc. Akpan and Aregbeyen (2013) "The rise of recurrent spending in Nigeria exceed the capital expenditure, the foreign donation inflow contribute to the former, while servicing debt reduce both components, hence between the following years the figure are as follows from 74.4% in 2011 to 71.5% in 2012 (BOF, 2012)".

2.5 Trend of Fiscal Operation in Nigeria

Understanding the fiscal operation in Nigeria, would shed more light to the topic of analysis, historically, the development of budget deficit at the central government level was not a post-colonial or recent phenomenon. Government at the center had recorded fiscal deficit in the first three years of political unification of the North and South in 1914. Between 1927 and 1959, and particularly during Great Depressions the government also recorded intermittent deficits. Statistically, the cumulative budget deficit in the three years 1914 to 1916, was N4.5 million and about N7.3 million between 1927 and 1931.Egwaikhide, (1996:244). The government deficit of these and other periods before

[8] Presentation of the 2012 Budget

the creation of central bank in 1959, were financed through the sale of securities, mainly to foreign lenders (Helleiner, 1966:232).

The Great Depression of the 1930s reduced the receipt of the Central Government, due to heavy reliance on trade taxes for revenue generation. But native authorities were less adversely affected because they rely more on internal sources of revenue. As a result, there was a reduction in the share of native authorities in direct tax revenue from 70% to 60% so as to raise the revenue of the central government in line with its expenditure responsibilities (Helleiner, 1966).

Following the attainment of independence in 1960, from the British Colony like other African countries. Nigeria, was guided by the declaration of National Development Plans (NDP) (the first, 1962 to 1968; the Second, 1970 to 1974; the third 1975 to 1980 and; the Fourth NDP 1981 to 1985) as a major strategy for achieving economic development and social progress. However, the Austerity measures in 1982 to 1985 and 1984 to 1985, the objectives of these packages was economic revival through cut in expenditure, retrenchment, imposition of levies and the abandonment of certain government projects, remain core to the implementation of the plan. The Nigerian economy in the 1980s suffered from inherent challenges, including overbearing role of the state, excessive deficit in the balance of payment, inappropriate government policies in economic management, import dependent consumption, production pattern which requires radical transformation of the economy, externalities such as the fall in oil prices, depreciation of the value of Naira, reliance on imported raw materials, etc. This led to the adoption of the structural programs (SAP) 1n 1986[9].

Table 1: Growth Rate (%) of BD, CAB and RGDP.

YEARS	RGDP	RCAB	RGBB
1981	0	0	0
1982	-1.72	22.04	56.43
1983	-6.63	-35.69	-44.88
1984	-1.36	-101.41	-20.93
1986	1.89	-235.38	171.55

[9] 2011 – annual economic performance report by National Planning Commission

1987	-0.69	-90.15	-28.65
1989	7.15	-1,206.36	24.45
1991	0.012	-71.71	61.67
1993	1.56	-149.44	64.82
1995	2.15	255.77	-101.42
1996	4.13	-302.07	3,104.94
1997	2.89	-29.98	-115.6
1998	2.82	-225.88	2,567.79
1999	1.19	-113.98	113.74
2000	4.89	1,438.81	-63.6
2001	4.71	-65.93	113
2002	4.63	-148.18	36.35
2003	9.57	-702	-32.74
2004	6.58	191.86	-14.86
2005	6.51	137.89	-6.49
2006	11.45	-3.96	-37.18
2007	6.45	-25.96	15.62
2008	5.98	-0.8	-59.59
2009	6.96	-40.36	1,609.65
2010	7.98	-3.16	36.47
2011	7.43	-32.93	4.8
2012	6.58	121.25	-15.79

Source: Author Compilation

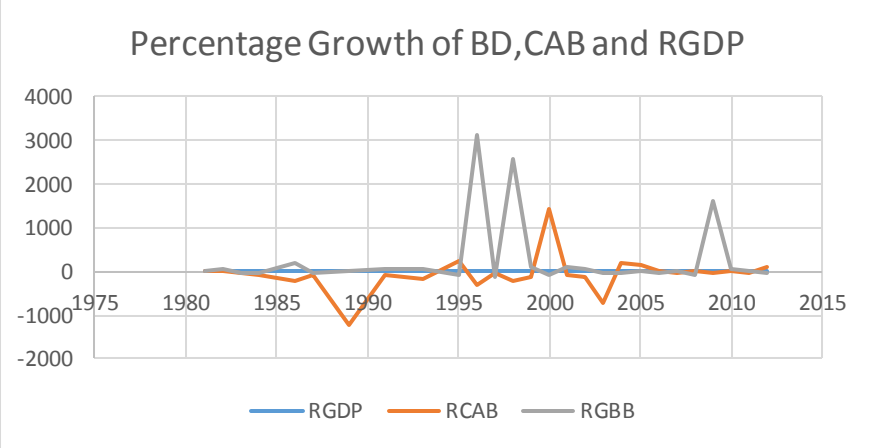

Figure 5: Percentage Growth of BD, CAB, and RGDP.

2.5.1 Structural Adjustment Period (SAP) 1986

The adoption of Structural Adjustment Program in July, 1986 as IMF-World Bank economic policy packages for Nigeria. The programmed design to deregulate the government intervention in the economic affairs, to restore the capitalist development model. During these period inflation has assumed a doomsday scenario from 5.4% in 1986 to 40.9% in 1989 (Anyanwu, 1992)

Objectives Specified by SAP include:

- Reorganizing various productive potentials of the economy.
- Balance of payment viability and positive fiscal balance over the period.
- To place a basis for a sustainable non-inflationary growth trend.
- Improving the optimal performance of public sector and efficiency, as well as given ample opportunities to private sector participation in the economy.

SAP however could not yield the desired result hence its replacement with a regime of a three –year Rolling plans in 1990 – 1998.

- **Post Structural Adjustment Program**

The post SAP period particularly from the magnitude of deficit has accelerated from N22 billion in 1990 to N35.8 billion in 1991, N39.5 billion in 1992 and N975, 752.00 billion in 2012. Fiscal deficits in the 1980s were derived from both internal and external factors, net credit to Federal government increased on the average by 58.9% while CBN credit alone accounted for an average of 81.2%, Net credit to the domestic economy rose by 38.7%, while narrow money supply increased by 41.3%, the high level of monetary expansion in the financial market was low to promote productivity. In the same period the consequences was the build-up of inflationary pressures and expectations (CBN, 1994). There was further acceleration of inflationary pressures between 1986 and 1993 as the inflation rate average 28.3% with double digits inflation rate of 38.3, 50.5,44.6 and 57.2% recorded in 1988,1989, 1992 and 1993 respectively (CBN, 1994).

2.6 Monetary Policy Framework in Nigeria

Monetary policy is the deliberate attempt by government through Central Bank to influence the economic activities. It is economic strategy choosing by CBN in deciding expansion or contraction in the Country's money supply. CBN as the apex bank distinguished from other financial institutions in terms of formulation and implementation of monetary policy.

2.6.1 Tools of Monetary Policy

- Open Market Operations: refer to the buying and selling of government securities, such as treasury bills and bonds, from and to the public and business organizations. It was used as an expansionary and contractionary monetary policy, in increasing and decreasing the amount of money in circulation.
- Bank Rate: This refer to the rate at which the Central Bank discounts or re-discounts bills for commercial banks and other financial institutions, or the rate at which it lends money to them. the bank rate influences the other interest rates in the economy
- Cash-deposit Ratio: This refers to the minimum legal cash reserve requirements of the commercial banks, it relates to the ratio of cash reserves to their total deposit liabilities, the Central Bank can reduce or increase the volume of money in the economy by adjusting the percentage of the cash-deposit ratio.
- Directives and Moral Suasion: A directive is an instruction or guideline from the Central Bank to commercial banks regarding the size of loans to give and the areas to which to direct bank lending. If it is the policy of government to encourage the growth of a particular sector of the economy (such as agriculture), the Central Bank will instruct commercial banks to increase their lending to such a priority area of the government.

The Central bank uses various strategies in the conduct of monetary policy, the target was to influence operating intermediate and ultimate targets through various channels (interest rate targeting, nominal gross domestic product or output targeting and inflation targeting, exchange rate targeting, monetary targeting) are the common target, from its initial

inception the CBN in the executing of monetary policy the two policy variables are implemented (exchange rate and monetary target) the exchange rate was use between 1959 and 1974, while monetary target was use from 1974 onward, the shift attributed largely to the collapse of Bretton word system of fixed exchange rate in 1972. (CBN, 2011)

2.7 Fiscal Policy Framework in Nigeria

Fiscal policy is the deliberate attempt by government to influence the economic activities by government's revenue (taxation) and spending policy designed to counter economic cycles in order to achieve macroeconomic objectives. The conduct of fiscal policy under the reference period include, the budget in 1990, the fiscal operations of the federal Government resulted in an overall deficit of N23, 357.0 million, N35, 306.9 million in 1991, N44, 158.5 million in 1992, record overall deficit of N101, 126.5 million, N70.82 billion, N103.8 in 2000, N161.4 billion in 2005, N1, 349.35 billion in 2009 (CBN, 2011).

CHAPTER THREE

REVIEW OF EMPIRICAL AND RELATED LITERATURE

3.1 Introduction

Numerous studies with contrasting views and thought among different scholars were enshrined in the theoretical and conceptual framework on the possible influence of fiscal expenditure and macroeconomic variables and the impact on current account position in relation to the growth of deficit and or surplus; despite the effort made by researchers to authenticate or refute the augments of these prominent school of thought. In these studies analysis were carried out using different economic methods and data concerning various countries and years. The obtained results have mostly showed that there are strong relationship between governmental fiscal operations and economic growth.

In the study conducted by Agbiokoro (2010) on budget deficit and macroeconomic performance in Nigeria between 1970 – 2006, four variables were used (Exchange rate, interest rate, inflation rate, GDP) to focus on the existence of long run relationship between fiscal measures and macro variables, bidirectional relation exist reveal by Granger Causality Test.

Osinubi and Olaleru (2006) in their study from 1970 – 2003, Budget deficits, external debt and economic growth in Nigeria, the outcome of the analysis prove the existence of

the debt Laffer Curve and the nonlinear curve effects of external debt, a linear spline specification is used as an approximation to the quadratic nonlinear model. The study further hold that fiscal expansion can be maintained to certain level of which the benefit can be maximized to stabilize the economy.

Awe and Funlayo (2014) studied the short run and long run implications of budget deficit on economic growth in Nigeria from 1980 – 2011, the variables were GDP, Budget deficit, Gross capital formation, Gross saving and interest rate, OLS regression analysis was used and they found that the relationship between budget deficit and economic growth is negative, Johansen cointegration technique revealed the long run effect of budget deficit.

Dayo (2012) in his study, A Bound Testing Analysis of Budget deficit and Current account Balance in Nigeria from 1960 – 2008 employed OLS and the variables used were Current account balance, budget balance, investment and private savings, the examined an equilibrium and birectional relation among the variables, the granger causality test support the twin deficits hypothesis of the study.

Lucia, Cristina and Diana (2013) developed a simple econometric tests of linear regression to investigate the mutual impact between budget deficits and macro-economic growth indicator of Romania from 2000 to 2010. The study showed a positive economic growth generates additional public resources, hence it is the authority choice to adopt whether a cyclical or a counter-cyclical fiscal policy to be adopted while the study also reveals that a negative economic growth generates both contraction and consequently adjustment of the public sector. Thus misapplication of fiscal policy end up accumulating the fiscal deficit the study revealed. In line with this view Caner, Grennes and Koehler-Geib (2010) in their study the main focus emphasize that maintaining debt-to-GDP ratio at certain level allowed the government to embark on growth-enhancing potentially counter cyclical policies.[10]

[10]Mehmet Caner, Thomas Grennes, Fritzi Koehler-Geib: "Finding the Tipping Point – When Sovereign Debt Turns Bad" **Policy Research Working Paper,** 5391(2010), 2.

Michael and Ram (1994) used simple linear regression model Harrod - Domar type growth model, the study tag Deficit – Growth connection: Some recent evidence from developing countries, the focal point here was that the highlighted interaction between public policy variables and economic growth, the emphasize the role of government expansionary fiscal measure in determining individual capital formation

However, Goher, Ahmed and Wali (2012) hold similar view in their research study that examined the consequential impacts of Budget deficit on economic growth of Pakistan from 1978 to 2009, while using Ordinary Least Square (OLS) the effect of budget deficit on the Gross domestic product explored are negative, because governments are short of the resources to meet their expenses in the long run, their savings as well as revenues are not sufficient to meet up expenses.

Moreover, reference to the work by Abd Rahman (2012) become prominent here, central to this study budget deficit and economic growth relationship from Malaysian perspective from 2000 to 2011 by using quarterly data, the approach were used to analyzed the equilibrium relation between all series, ARDL approach is employed, thus concludes that equilibrium relationship exists between productive expenditures and economic growth of Malaysia. Both variables are positively related.

Onafowora and Owoye (2006) in their study from 1970 to 2001, to investigate the temporal causal relationship between budget and trade deficits and some other economic variables by using cointegration techniques, Granger-causality tests and generalize impulse analysis, confirm that it was empirically established that the "twin deficits" between trade deficit, money supply, domestic income, interest rate, and real effective exchange rate for the reference period, the existence of equilibrium relationship between trade deficit and budget deficit, hence increases in money supply and the depreciation of the domestic currency reduce trade deficits, while rising domestic income (output growth) and rising interest rates worsen the trade deficits in the long run. To complement the above findings Robert Eisner (1989) in his paper Budget Deficits: Rhetoric and Reality, asserts that budget deficit causes inflation, raise interest rates, bring on the trade deficits, it also crowd out investment and irresponsible mortgage on the future.

Oladipo, Olasunkanmi and Onakoya (2012) in their research study on the empirical analysis of twins' deficits in Nigeria from 1970 to 2008, the study prove the Keynesian assertion of budget deficit and trade deficit in the Nigerian economy and exhibit a strong link, and also the bidirectional causality between the twin deficits in Nigeria, they used error correction and Granger causality test.

In another direction John and Daniel (2010) in their research study, Revisiting the Twin Deficits Hypothesis: The effect of fiscal consolidation on the current account; the study between internal and external sector exposed that reducing budget deficit has positive response in reducing deficit in the current account.

Festus O. Egwaikhide (1997) in his study effects of Budget deficits on the current account balance in Nigeria "A simulation Exercise" (1973 – 1993) annual time-series data are used, the employed ordinary least square (OLS). The outcome emphasize that deficit spendings have strong bearing attributed that the performance of domestic economy determine the external sector stability.

Iya, Gabdo and Aminu (2014) in their study An empirical analysis of the effects of fiscal deficit on economic growth in Nigeria, through the application of OLS techniques, with the following variables, Real GDP, interest rate, exchange rate, government fiscal deficit and domestic investment share of real GDP, from 1981 – 2009, the results of the OLS revealed that interest rate, government fiscal deficit possessed a positive impact on economic growth proxied by real GDP, also government fiscal deficit does not significantly affect economic growth (Real GDP).

Table 2: SUMMARY OF SOME SELECTED EMPIRICAL STUDIES

Authors	Country and time of study	Variables Used	Econometric Method Used	Summary of Findings
Agbiokoro (2010)	Nigeria from 1970 -2006	GDP, NER, IR and INFR	Multiple regression and	Positive impact among the variables

			Cointegration analysis	
Dayo(2012)	Nigeria from (1960–2008)	CAB, BB, INV and PRIV savings	OLS and Granger Causality test	Positive impact Granger causality support the twin deficit hypothesis
Iya, Aminu and Gabdo (2014)	Nigeria from 1981 – 2009	RGDP, IR, EXR,GFD and DI/RGDP	OLS	Positive impact, Also GFD does not significantly affect economic growth
Awe and Funlayo (2014)	Nigeria from 1980 – 2011	GDP, IR, GCF, BD and GS	OLS and Johensen Cointegration technique	Positive impact except budget deficit and interest rate show negative relationship with GDP
Egwaikhide (1997)	Nigeria 1973–1993, a simulation exercise.	GDP, CPI, IMP,MS, NOE, TB, ID, TR GE, and INV.	OLS	Positive impact

Oladipo, Olasunkanmi and Onakoya (2012)	Nigeria 1970-2008	FD, GDP, TD, ER.	Pairwise causality test and ECM	The outcomes show a bidirectional causality between budget and trade deficits in Nigeria.
Olubenga and Owoye (2006)	Nigeria 1980-2001	TD, BD, MOS, INT, IIP and RER	Cointegration and Vector error-correction	Positive impact, and a unidirectional from trade deficit to budget deficit in Nigeria
Osinubi and Olaleru (2006)	Nigeria 1970-2003	GDP, ED, BD,	A linear spline specification used as an approximation	Positive impact

CHAPTER FOUR

METHODOLOGY AND DATA ANALYSIS

4.1 Introduction

This chapter explain the steps and procedures used in empirical analysis of the research, major findings were also analyzed in order to find their economic implications and the data covered from 1981 to 2013 and was gathered from the Central Bank of Nigeria and other relevant sources.

4.2 Sources of Data

Secondary data was the main data used for the research. Data was obtained from Central Bank of Nigeria (CBN) publication such as Statistical bulletin, Economic and Financial Review, Annual Report and Statement of Account, Federal office of Statistics, Economic and Financial Magazines, Journals, Business and Financial newspapers. Information was also obtained from World Bank data query and various websites from internet.

4.3 Method of Data Analysis

This research study examine the effects of budget deficit on economic growth and its impact of current account balance in Nigeria, by using ARDL approach and equilibrium correction mechanism (ECM) Nur Hayati Abd Rahman (2012) employed the technique in modeling the link between budget deficit, economic growth and macroeconomic variables short run and long run relationship. Irrespective of the status of individual regressor are either I(1) or I(0) the conditions was satisfied. The ECM technique, Wald or F-statistic

underlined the widely used Dickey-Fuller type regression used to test the significance of lagged levels of the variables. The bound test is based on the null hypothesis that state there exists no long run relationship in levels between the included variables, irrespective of whether the regressors are fully I (0) or purely I (1) or mutually cointegrated (pesaran et al, 2001) in other words the technique allow for the mixture of I (0) and I (1) variables

One of the advantage exhibit by ECM over other estimation is that it includes both short run and long run dynamics, Augmented Dickey-Fuller (ADF) and its counterpart Phillips-Perron (PP) are employed to determine the order of integration of the series the manually determined the optimal lag length in ADF test and bandwidth size in PP test. Both the two tests reveal that at 5% significance level.

Computer packages use include Econometric Views5, Micro fit and Microsoft excel 2010

4.4 Model Specification

It is necessary to find the appropriate model to investigate the relative impact of the above mentioned variables, using single equation would not solve the questions raised with high correlation between GDP and other variables rather an Autoregressive distributed lag (ARDL) model, also various types of growth model employed, the endogenous growth model as use by Barro (1990). The model recognizes policy variables as a determinant of long term growth, and was supported by the model employed by Trevino and Upadhya (2003), where productivity of the economy is determined by the availability of factors of production. The modified version look like this.

$$Y=f(K, L) \quad \ldots\ldots 4.1$$

Where:

Y = output level (real GDP); K and L = trend and stationary components

Transforming our functional representation to an econometric equation, we have

$$Y_t = \beta o + \beta_1 CAB_t + \beta_2 GBB_t + \beta_3 REER_t + \beta_4 INT_t + \varepsilon_t \quad \ldots\ldots 4.2$$

Where:

Y_t denotes economic growth as measured by Real Gross Domestic Product, CAB= Current Account Balance, GBB= Government Budget Balance, REER= Real Effective Exchange Rate, INT= Interest rate, ε_t= stochastic error term. βo is intercept while β_1 - β_4 slope coefficient/ parameter coefficients.

A priori, we expected $\beta_1, \beta_2, \beta_3, \beta_4, >0$

To ascertain the rate of change (elasticity) in the dependent variable with given independent variables, the rate of change of variables (real GDP, real effective exchange rate, and real current account balance) took while interest rate is already in rate. Hence, we have.

$$\Delta Y_t=\beta o+\beta_1\Delta CAB_t+\beta_2\Delta GBB_t+\beta_3\Delta REER_t+\beta_4\Delta INT_t+\varepsilon_t \quad \text{4.3}$$

$$\Delta CAB_t=\beta o+\beta_1\Delta Y_t+\beta_2\Delta GBB_t+\beta_3\Delta REER_t+\beta_4\Delta INT_t+\varepsilon_t \quad \text{4.4}$$

$$\Delta GBB_t=\beta o+\beta_1\Delta Y_t+\beta_2\Delta CAB_t+\beta_3\Delta REER_t+\beta_4\Delta INT_t+\varepsilon_t \quad \text{4.5}$$

$$\Delta REER_t=\beta o+\beta_1\Delta Y_t+\beta_2\Delta CAB_t+\beta_3\Delta GBB_t+\beta_4\Delta INT_t+\varepsilon_t \quad \text{4.6}$$

$$\Delta INT_t=\beta o+\beta_1\Delta Y_t+\beta_2\Delta CAB_t+\beta_3\Delta GBB_t+\beta_4\Delta REER_t+\varepsilon_t \quad \text{4.7}$$

The variables defined above, whereas Δ, denotes percentage change

4.5 Description of variables

The theoretical explanation in the research study of the variables as use in the model is important by explaining the expected signs of the coefficients listed below.

4.5.1 Gross Domestic Product

Gross Domestic Product is the aggregate production in an economy irrespective of the nationality of the people during a period of time, the constant basic prices at 1990 (or 2010) of GDP is use, (otherwise known as real GDP).

4.5.2 Current Account Balance

The current account use in this research study describe measures net flows of goods, services, income, and unilateral transfers, including government grants. It reflects the net foreign capital flows or net foreign investment. (Sachs, 1981)

This equation provide equivalent definitions:

$$CA = X - M + F + R \quad \text{.....4.8}$$

$$CA = Y - (C + I + G) + R \quad \text{.....4.9}$$

$$CA = C + S - C - I + (T - G)$$

$$CA \equiv (S^P + S^G) - I \quad \text{.....4.10}$$

Where:

- Equation 4.8 equate the standard definition of the CAB.
- Equation 4.9 reflects that CA must equal income minus absorption.
- Equation 4.10represents CA surplus as the excess of saving over investment.

4.5.3 Government Budget Balance

Government budget balance is the actual total government receipts minus the actual total government expenditures, the national income identity, relate government budget balance and current account by the gap between total saving and investment, in an economy of Nigeria, a budget deficit (negative public sector saving) with unchanged private saving will be transformed either into a reduced investment and hence lowered capital stock or into a reduced current account surplus (or increased deficits).

4.5.4 Real Effective Exchange Rate

Effective real exchange rate is an index between two countries' currencies, a relative measure of price between different currencies, it is the ratio of foreign price level to home price level, the term is an important explanatory variable in determining the current account balance.

4.5.5 Interest Rate

Interest rate as used in this research study reveal that, the vital target of monetary policy are taken when dealing with variables like investment, inflation and unemployment, interest rate adjustment are made to keep the variables within the target range for the health of the economy, investors access to fund in order to invest with fluctuating in price for accessing such fund borrowing will be discouraged, the impotency of interest rate in determining the supply and demand of fund remain an instrument the monetary authorities' use to influence the level of economic activity.

Table 3: Sources of Data Variables

Variables	Source(s) of Data
Gross Domestic Product(GDP)	Central Bank of Nigeria: Statistical Bulletin, Section C_Real Sector Statistics. Table C1.2 (Excel Sheets, C.1.1) http://cenbank.org/Out/2014/
Current Account Balance (CAB)	Central Bank of Nigeria: Statistical Bulletin, Section B_Public Finance Statistics. Table B.1.1 (Excel Sheets,B1.1) http://cenbank.org/Out/2014/
Government Budget Balance(GBB)	Central Bank of Nigeria: Statistical Bulletin, Section B_Public Finance Statistics. Table B.1.1 (Excel Sheets,B1.1) http://cenbank.org/Out/2014/
Real Effective Exchange Rate(REER)	Central Bank of Nigeria: Statistical Bulletin, Section_D External Sector Statistics. Table D.3.1 (Excel Sheets,D.3.1) http://cenbank.org/Out/2014/
Interest Rate(INT)	Central Bank of Nigeria: Statistical Bulletin, Sectin A_Financial Statistics.Table A.2.5.1 (Excel Sheet A.2.5.1) http://cenbank.org/Out/2014/

4.6 The Unit Root Test (Stationery) Test Model

Augmented Dickey Fuller test (ADF), is the commonly used unit root test in literatures, the need to avoid spurious regression, necessitate stationary test of the series, performing this the outcomes of the test remain valid and justified test statistic (Greene, 2003). The

order of integration can be establish by possible number of differencing of the stationarity of the variables. The ADF test is based on the following regression steps. (Asteriou and Hall, 2007)

$$\Delta Y_t = \beta o + \delta Y_{t-1} + \beta_{2t} \sum_{i=1}^{p} \alpha i \Delta Y_t - i + \varepsilon_t \quad \textbf{.....4.11}$$

$$\Delta Y_t = \beta o + \delta Y_{t-1} + \sum_{i=1}^{p} \alpha i \Delta Y_{t-1} + \varepsilon_t \quad .....4.12$$

$$\Delta Y_t = \delta Y_{t-1} + \sum_{i=1}^{p} \alpha i \Delta Y_{t-1} + \varepsilon_t \quad .....4.13$$

Where:

Y_t = is our dependent variable of interest (variable tested for unit root)

αo = is the intercept.

Δ = is the differencing operator

t = is the time trend and

ε = is the white noise residual of zero mean and constant variance.

Both the null and alternative hypotheses in unit root test are involved in ADF test

Ho: $\gamma = 0$ (Yt is not stationary or Y_t has a unit root test)

H_1: $\gamma \neq 0$ (Yt is stationary).

If the null hypothesis of γ equal zero is not rejected, then a unit root exists in the series Yt (Gujarati, 2003).

Phillips-perron (1988) modified the ADF test procedure to incorporate a known structural change into the tests for unit roots. Thus, when the precise data of the structural break is unknown and if the residual process are heterogeneous or weekly dependent the

alternative Phillips-Perron test can be used. This is given below in the form of AR (1) process.

$$\Delta Y_{t-1} = \alpha o + \delta Y_{t-1} + \alpha_{2t} + e_t \quad \text{.....4.14}$$

$$\Delta Y_{t-1} = \alpha o + \delta Y_{t-1} + e_t \quad \text{.....4.15}$$

$$\Delta Y_{t-1} = \delta Y_{t-1} + e_t \quad \text{.....4.16}$$

Where

ΔY_{t-1} = is the change in the lagged dependent variable

αo = constant term

α_2 = coefficient of a time trend t

Y_{t-1} = First lag of explanatory variable

e_t = white noise error term

The difference between the three regressions again concerns the presence of constant and time trend terms. However, Phillips- Perron Unit root test comprises the following hypothesis

H_O: $\mu = 0$ (Y_t is not stationary)

H_1: $\mu \neq 0$ (Y_t is stationary)

The most general model estimated to answered set of questions in the unit root test, the procedure is summarized as follows:

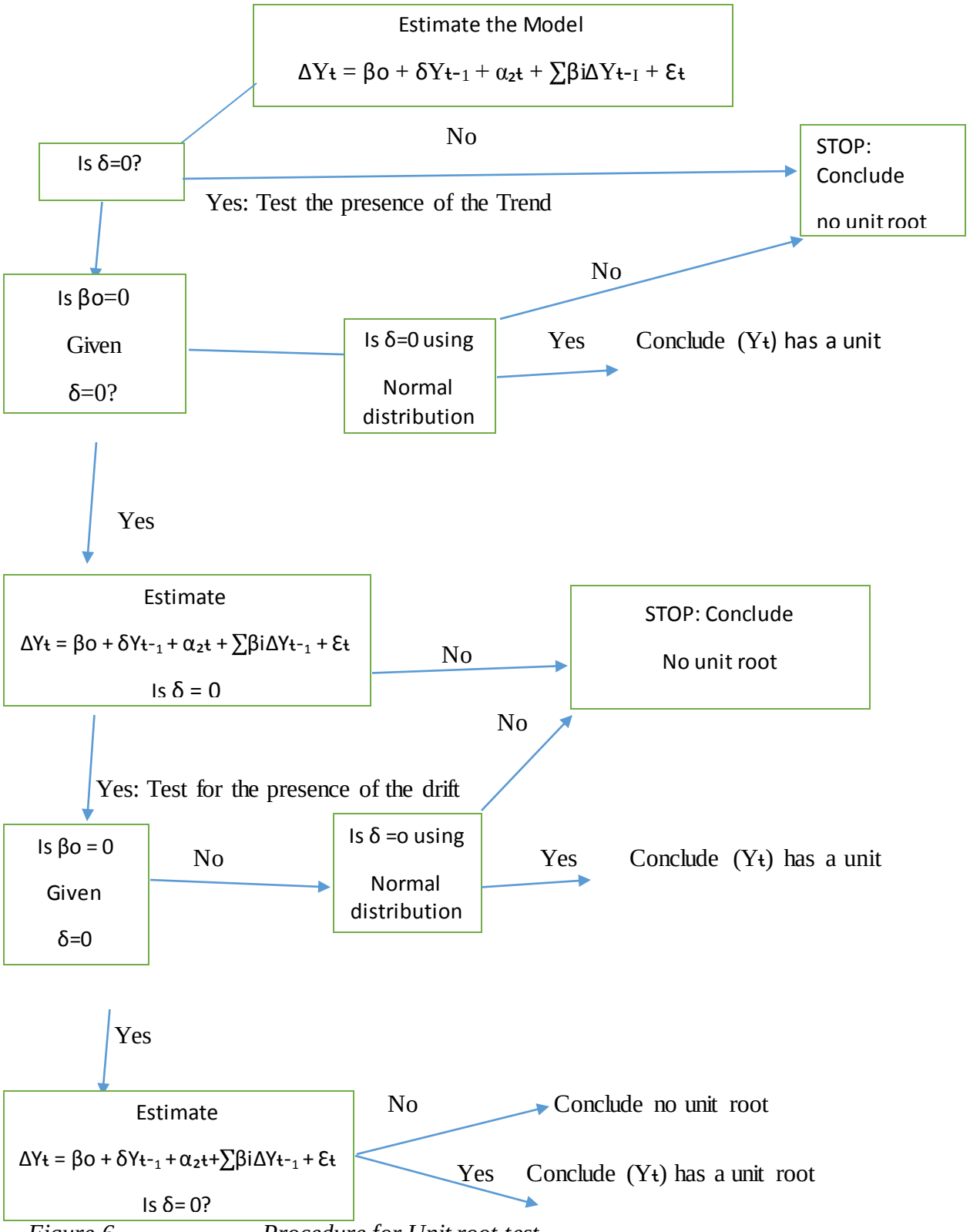

Figure 6 *Procedure for Unit root test*

Sources: Enders (2004)

4.7 ARDL Approach to Co- integration test model

Precisely long run Econometric analysis remain a central theme for theoretical and empirical research in economics, In this research study the bounds test for co-integration within ARDL modeling approach is adopted. (The Autoregressive distributed lag). Paseran et al. (2001) in that model the order of integration of the variables (regardless of whether regressors are purely I (0) purely I (1) or mutually co-integrated) can be applied. The ARDL approach consist the following conditional error correction models:

$$\Delta Y_t = \delta o + \delta_{2t} + \sum_{i-1}^{n-1} \Delta Y_{t-k} + \sum_{i-0}^{m-1} Y \Delta X_{t-k} + \alpha Y_{t-1} + \alpha i X_{t-1} + U_t \quad \text{.....4.17}$$

Where:

Δ = is the differencing operator

Y_t = is our dependent variable

X_t = is the independent variable

U_t = is the white noise residual for serially independent error term.

Both the null and alternative hypothesis of co-integration and no co-integration are as follows

H0: $\beta 0 = \beta_i = 0$ (no co-integration)

H_1: $\beta 0 \neq \beta_i \neq 0$ (co-integration exists)

F-test is used to investigate one or more long-run relationships among the variables.

To present the error correction models order of co-integration in a specified method (Asteriou and Hall, 2007) assert that stationary data is in fact a requirement of ARDL model, thus error correction model can be obtain. However, ECMs are isophormic to ARDL models that the case of co-integration based on the bounds test, the ECM can be estimated as this.

$$\Delta Y_t = \delta o + \delta_{2t} + \sum_{i-1}^{n-1} \Delta Y_{t-k} + \sum_{i-0}^{m-1} \lambda \Delta X_{t-K} - \pi \epsilon_{t-1} + \varepsilon_t \quad \text{.....4.18}$$

Where:

Δ = denotes the differencing operator

ε_t = is serially independent random error with zero mean

π = is the error correction term (adjustment coefficient derived from the long run co-integration model)

However, π show us how much of the equilibrium error is corrected each period and it is expected to be negative and statistically significant, if $\pi = 0$, then there is no adjustment and therefore there is no long run relationship, it was against this background that ARDL equation of this research can be transformed as follows.

$$\Delta Y_t=\delta o+\delta_{2t}+\sum_{i-1}^{n-1}\Delta Y_{t-1}+\sum_{i=0}^{m-1}\gamma\Delta CAB_{t-i}+\sum_{i-0}^{m-1}\gamma\Delta GBB_{t-i}+\sum_{i=0}^{m-1}\gamma\Delta REER_{t-i}+\sum_{i=0}^{m-1}\gamma\Delta INT_{t-i}+\alpha o\ln Y_{t-1}+\alpha_1 CAB_{t-1}+\alpha_2 GBB_{t-1}+\alpha_3 REER_{t-1}+\alpha_4 INT_{t-1}+\varepsilon_t \quad \ldots\ldots 4.19$$

$$\Delta CAB_t=\delta o+\delta_{2t}+\sum_{i-1}^{n-1}\Delta CAB_{t-1}+\sum_{i=0}^{m-1}\gamma\Delta Y_{t-1}+\sum_{i=0}^{m-1}\gamma\Delta GBB_{t-1}+\sum_{i=0}^{m-1}\gamma\Delta REER_{t-1}+\sum_{i=0}^{m-1}\gamma\Delta INT_{t-1}+\alpha oCAB_{t-1}+\alpha_1 Y_{t-1}+\alpha_2 GBB_{t-1}+\alpha_3 REER_{t-1}+\alpha_4 INT_{t-1}+\varepsilon_t \quad \ldots\ldots 4.20$$

$$\Delta GBB_t=\delta o+\delta_{2t}+\sum_{i-1}^{n-1}\Delta GBB_{t-i}+\sum_{i-0}^{m-1}\gamma\Delta Y_{t-i}+\sum_{i=0}^{m-1}\gamma\Delta CAB_{t-1}+\sum_{i=0}^{m-1}\gamma\Delta REER_{t-i}+\sum_{i=0}^{m-1}\gamma\Delta INT_{t-1}+\alpha oGBB_{t-1}+\alpha_1 Y_{t-1}+\alpha_2 CAB_{t-1}+\alpha_3 REER_{t-1}+\alpha_4 INT_{t-1}+\varepsilon_t \quad \ldots\ldots 4.21$$

$$\Delta REER_t=\delta o+\delta_2+\sum_{i-1}^{n-1}\Delta REER_{t-i}+\sum_{i=0}^{m-1}\gamma\Delta Y_{t-i}+\sum_{i=0}^{m-1}\gamma\Delta CAB_{t-i}+\sum_{i=0}^{m-1}\gamma\Delta GBB_{t-i}+\sum_{i=0}^{m-1}\gamma\Delta INT_{t-i}+\alpha oREER_{t-1}+\alpha_1 Y_{t-1}+\alpha_2 CAB_{t-1}+\alpha_3 GBB_{t-1}+\alpha_4 INT_{t-1}+\varepsilon_t \quad \ldots\ldots 4.22$$

$$\Delta INT_t=\delta o+\delta_{2t}+\sum_{i=1}^{n-1}\Delta INT_{t-i}+\sum_{i=0}^{m-1}\gamma\Delta Y_{t-i}+\sum_{i=0}^{m-1}\gamma\Delta CAB_{t-i}+\sum_{i=0}^{m-1}\gamma\Delta GBB_{t-i}+\sum_{i=0}^{m-1}\gamma\Delta REER_{t-i}+\alpha oINT_{t-1}+\alpha_2 Y_{t-1}+\alpha_2 CAB_{t-1}+\alpha_3 GBB_{t-1}+\alpha_4 REER_{t_1}+\varepsilon_t \quad \ldots\ldots 4.23$$

4.8 Unit Root Test

Before conducting cointegration analysis, the time series properties of the data were checked first, various methods can be used to examine the stationery or otherwise of the variables, in this study two are used in order to have robust results. These are Augmented Dickey Fuller (ADF) and Phillips-Perron (PP). This is done so as to check that all the variables are either I (1) or I (0). It is against this background that the main aim of Unit root test is to ensure variable of greater order of integration than one is not included in the equations, our Unit root test reveals that all the variables are combination of I (1) none is I (2) at first differences this also qualifies it to be suitable for the ARDL approach to cointegration.

Table 4: ADF and PP Unit Root test at Level

Variables	ADF Test at Level		PP Test at Level	
	Test	Probability	T- Statistic	Probability
RGDP				
ΔRGDP	4.505982*	0.0059	-3.770329*	0.0077
RCAB				
ΔRCAB	-6.215920*	0.0001	-6.071260*	0.0000
RGBB				
ΔRGBB	-6.273363*	0.0000	-6.226221*	0.0000
RINT				
ΔRINT	-4.193455*	0.0055	-4.177265*	0.0056
REER				
ΔREER	-2.856356**	0.0758	-8.215795*	0.0000

Source: Extract from estimation output using E-Views 5

Note:*and** indicates stationery at 1% and 5% level of significance respectively

The above table indicate that all the variables are stationary at level, at 1% for both ADF and PP test only ΔREER characterize as I (1) in the ADF test process, and none of the variable is I (2).

Table 5: ADF and PP Unit root test at first difference

Variables	ADF Test at First Difference		PP Test at First Difference	
	T statistic	Probability	T statistic	Probability
RGDP				
ΔRGDP	-6.837256*	0.0000	-11.09385*	0.0000
RCAB				
ΔRCAB	-5.36405*	0.0009	-23.86311*	0.0001
REER				
ΔREER	-6.315496*	0.0006	-26.39065*	0.0001
RGBB				
ΔRGBB	-12.8817*	0.0000	-14.59119*	0.0000
RINT				
ΔRINT	-6.776602*	0.0007	-5.747184*	0.0004

Source: extract from estimation output using E-views 5
Note: * and ** indicates stationary at 1% and 5% level of significance respectively

The results in table 1 above indicate that all the variables under study, were stationary at first difference at 1% level of significant using ADF and PP tests. Therefore, characterized as I (0) and I (1) processes and none is I (2).

4.9 Bound Test Results

In the absence of including variable of the higher order I (2) of the variables used in the equation, then to examine whether there exists a long run relationship among the variables in the Model using ordinary least squares (OLS) technique and then conduct a Wald test in Eviews 5. The F- values obtained from this test then compared with the lower and upper critical value Bounds for the F-statistic found in Paseran et al 1999.

Table 6: F- Statistics for testing the existence of Long-run Cointegration

Equation	F Statistics	Deterministic Trend	Crt.Value Bound For F Test I(0)	I(1)	Conclusion
GDP	7.939567	Constant	3.74	5.06	Cointegration
CAB	0.831750**	Constant	2.62	3.79	No
GBB	0.165540**	Constant	2.26	3.35	No
INT	0.257043**	Constant	2.26	3.35	No
REER	0.156975**	Constant	2.26	3.35	No

Computed Wald statistics (F –Statistics) is 7.939567; Note: *and** denote rejection of the null hypothesis at 10% and 5% levels, respectively. Critical Values are obtained from paseran et al (1999) (Table Case III: Unrestricted intercept and no trend: F- stat 7.939567> upper bound I (1) – Cointegrated.)

it is observe that since the computed value of F- Statistics > critical upper bound value at 5% significance level; there is a long-run relationship among the first model with real gross domestic product stand as the dependent variable and its determinants as independent variables, meanwhile as the above statement suggest model one have a long run relation between the dependent and independent variables, whereas the other models can be analyzed in the short run.

Table 7: Autoregressive Distributed Lag

Regresors	Coefficients	Standard error	T – ratio	Probability
RGDP(-1)	0.46470	0.21289	2.1828	[0.041]
RGDP(-2)	-0.14737	0.22528	-0.65413	[0.520]
CAB	0.0015426	0.6950E-3	2.2195	[0.038]
CAB(-1)	-0.8560E-3	0.7968E-3	-1.0743	[0.295]
GBB	-0.2478E-5	0.6311E-3	-0.0039270	[0.997]
GBB(-1)	0.1270E-3	0.4648E-3	0.27320	[0.788]
INT	0.015752	0.024765	0.63605	[0.532]
INT(-1)	0.0090409	0.031877	0.28362	[0.780]
REER	-0.010317	0.038130	-0.27057	[0.789]

The above table 6 extracted from micro fit 4.1 output. The empirical findings show that some of the explanatory variables are positive while others are negatively related, the lags of Real Gross Domestic Product (RGDP), show positive response at 5 per cent significant level, while current account balance contribute to the growth rate of the economy, but with expansionary fiscal policy decelerate the economy growth rate, also interest rate remain insignificant while the real exchange rate exhibit negative relation with the economy, the exchange rate policy was unfavorable to the growth rate of the economy. Also the RGDP is statistically insignificant and affect capital account which reduce export and increase

import potential as these affect the foreign demand of assets in the domestic economy. These consistency prove the existence of twin deficits.

Taking the second lag of RGDP the effect of GBB on national saving is more likely than one-for-one, for a decrease in public saving produces a partially offsetting increase in private saving as can be seen from RGDP and reduce net exports as the case of CAB, which affect investment, total fall in investment and net exports must exactly match the fall in national saving, which lead to the flow of assets abroad.

Real interest rate is statistically insignificant with a positive coefficient showing that negative growth rate of the economy lead to the fall in investment which lead to increase imports and virtually reduce exports and further create current account deficits, the real exchange rate is statistically insignificant and negative coefficient showing a fall in real exchange rate (exchange rate appreciation) is a better option for Nigerian to accelerate real rate of growth by improving the capital expenditure project. Thus, this correspond to the monetarist proposition that negative government budget deficit were counter-productive to real growth rate of the economy.

4.10 Long Run and Error Correction Model

Based on the results obtain above. The existence of a long run equilibrium relationship in our first model equations we begin by presenting the long run and univariate ECM models. Short run estimates of all the five equations in the next phase. The coefficients of the long run relationship are estimated by using maximum lag of 2. The selected model of ARDL (2, 1, 1, 1) specification. The estimated long run coefficients are as follows.

Table 8: Long Run Model Equation ARDL

Regressor	Coefficient	Standard error	T- Ratio	Probability
CAB	0.0010057	0.0018496	0.54377	[0.593]
GBB	0.1824E-3	0.0012113	0.15055	[0.882]
INT	0.0368317	0.070774	0.51315	[0.613]
REER	-0.015113	0.057724	-0.26181	[0.796]
CONSTANT	0.0054134	0.026555	0.20386	[0.841]

From the table above long run model equation indicate the coefficients of the variables. The results show an increase in Current Account Balance (CAB) by 1% increase the Real Gross Domestic Product (RGDP) by 0.1005%, Government Budget Balance (GBB) indicate that an increase in government expenditure by 1% the RGDP increase by 18.24%. Then, a 1% increase in interest rate the RGDP increase by 3.68%. However, the slide change in Real Effective Exchange Rate (REER) affects the RGDP negatively, a 1% increase in RE lead to the flow of assets abroad by 1.51%, the REER attributed to the fact that pegging is used as a system of fixed value of exchange rate at the beginning of every year. REER is the only forcing variable that explain the economy behaviour in the long run, the coefficients variables were not statistically significance at 5 percent level, because these increase demand for domestic assets affects the market for foreign currency as such the net export contribute to the growth of deficits in the current account, with this conditions the deficits position current account affect the economy in the long run.

4.11 Error Correction Representation

Table 9: Error Correction Representation

Regressor	Coefficient	Standard error	T- Statistic	Probability
ΔCAB	-0.0010057	0.0018496	0.54377	[0.593]
ΔGBB	-0.1824E-3	0.0012113	0.15055	[0.882]
ΔINT	-0.36317	0.070774	0.51315	[0.613]
ΔREER	0.015113	0.057724	-0.26181	[0.796]
ΔC	-0.0054134	0.026555	0.20386	[0.841]
ECM(-1)	-0.68267	0.27189	-2.5108	[0.020]
R Squared	0.60921			
Adjusted Bar Square	0.41381			
Schwarz Bayesian Criteria	51.2838			
DW- Statistic	1.8893			
F- Statistic [Prob]	4.4541[0.003]			

The estimates of the error correction model based on the long run relationship, the coefficient given as -0.68267 with probability of 0.020, The ECM coefficient suggest that there is high speed of convergence to the equilibrium level when the economy is shocked and it has a correct negative sign indicating convergence in the short run, and it is statistically significant at 5 percent level that the long run equilibrium can be attained. The decision hold that 68.27% percent of adjustment takes place every year (1/68.27) *100 = 1½ years, any short run deviation will take about 1½ years to adjust to long run equilibrium despite the fact that the coefficient of the variables have negative sign. Thus, the regression result fit reasonably well and passes the diagnostic tests of autocorrelation and heteroscedesticity.

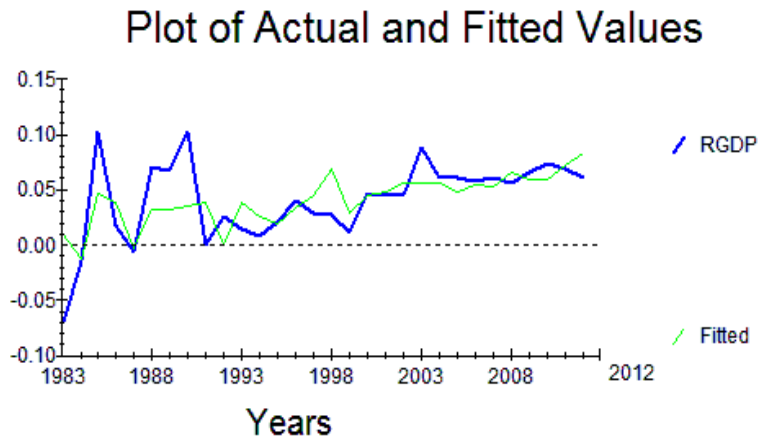

Figure 7: Plot of actual and fitted value long run

The forecasting errors and the plots of the graphs of the actual and forecast values for models are presented in figure 6 and 7, these graphs show that how dynamic forecast values for both the RGDP and ΔRGDP as well as the change in the level of RGDP are very close to the actual data for both equation.

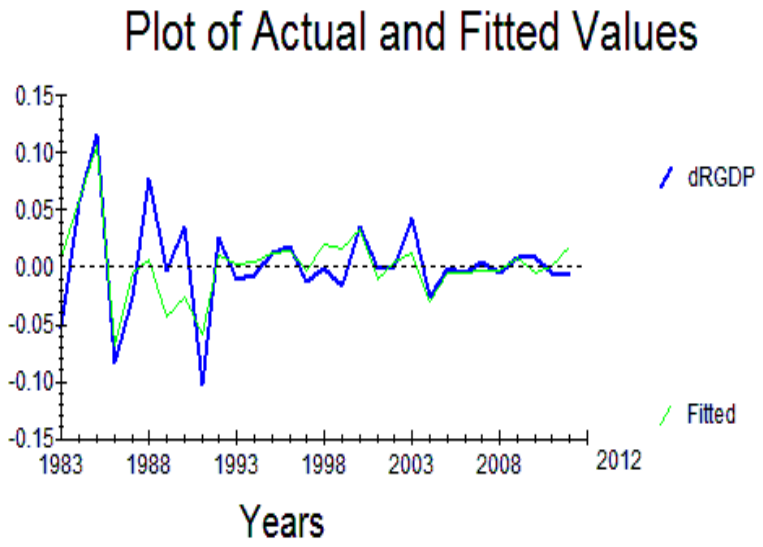

Figure 8: Plot of Actual and Fitted Values Short Run

4.12 Short Run Model

The following are the estimates of the short run equation of the real gross domestic product model, the estimate are obtain from ARDL for Micro fit 4.1

Table 10: Short Run Model

Regressor	Coefficient	Standard error	T- Statistic	Probability
ΔCAB	0.0015426	0.6950E-3	2.2195	[0.037]
ΔGBB	-0.2478E-5	0.6311E-3	-0.0039270	[0.997]
ΔINT	0.015752	0.024765	0.63605	[0.531]
ΔREER	-0.010317	0.038130	-0.27057	[0.789]
ΔC	0.0036956	0.018053	0.20470	[0.840]
ΔT	0.0014328	0.9520E-3	1.5050	[0.146]
R-Square	0.60921			
R- Bar Square	0.41381			
Serial Correl. *CHSQ(1)	(1) = 1.7860[0.181]			
Heterocedesticity*CHSQ(1)	(1) = 2.6281[0.105]			

To examine the short run dynamics among RGDP, ΔCAB, ΔGBB, ΔINT and ΔREER. The result is depicted in the above table, the table show that there is a short run ΔCAB

and the convergence to the state of equilibrium level was help by ΔCAB to RGDP at 5 percent level significant level, the ΔGBB and ΔREER have expected theoretical sign, and the economy attain equilibrium by the expansionary fiscal policy then the impact of exchange rate policy in this situation move the economy without corresponding increase to the growth rate of the economy. This show the increase in recurrent expenditure incur to finance deficit. Meanwhile the exchange rate policy correspond to decelerate the real growth rate of the economy in this situation the increased demand for domestic assets affect the RGDP negative growth rate, in these situation a unit change in these two variables will lead to retard the growth rate of RGDP.

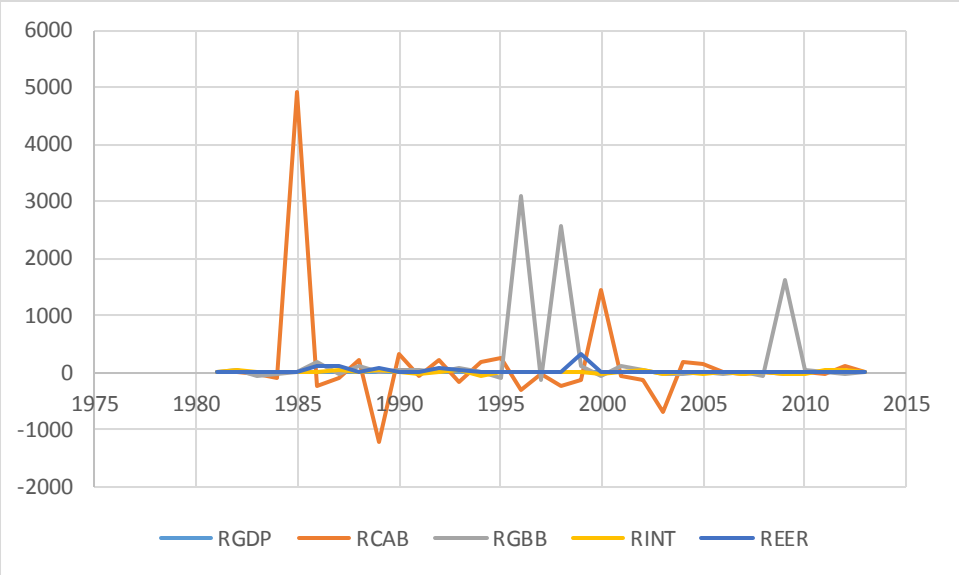

Figure 9: Trend Growth rate of the Variables Used

From the figure 8: above the trend growth of the variables exhibit at various point from 1981 to 2013. The RCAB and RGBB characterize by fluctuations in the real growth rate of the economy, the expansionary fiscal policy does not favor the growth rate well with RGBB surplus at 1995, 1996 and 2008 determine exclusively by external factors, while RCAB respond to growth rate exclusively by external factor, the increase demand of petroleum product by the world.

4.13 Stability Test

The stability test of the coefficient of the Model is tested by means of cumulative sum control chart (CUSUM) and (CUSUM-Squared), following the literature we tested the stability of the model using CUSUM and CUSUM sq. tests is to adhere the graphical presentation of the tests, the stability of the model can also be justified, obviously the individual coefficient of the model found within the boundary of the critical limit and remain stable.

Plot of Cumulative sum of recursive residuals for RGDP f (CAB, GBB, INT, and REER)

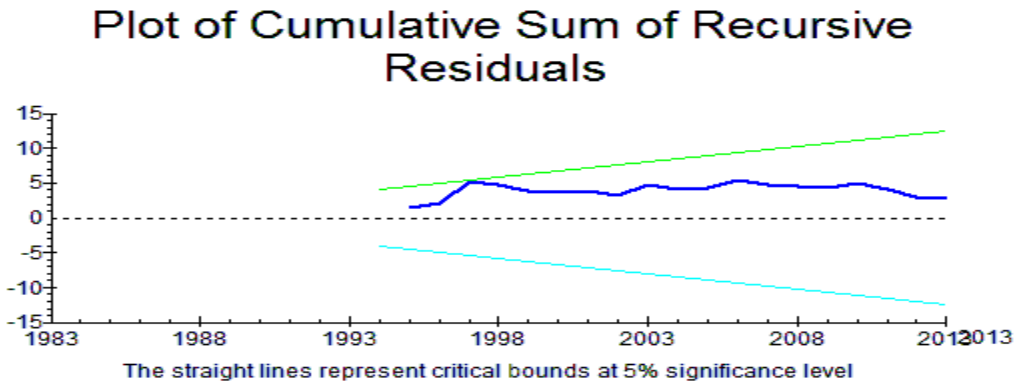

Figure 10: Plot of Cumulative Sum of Recursive Residuals

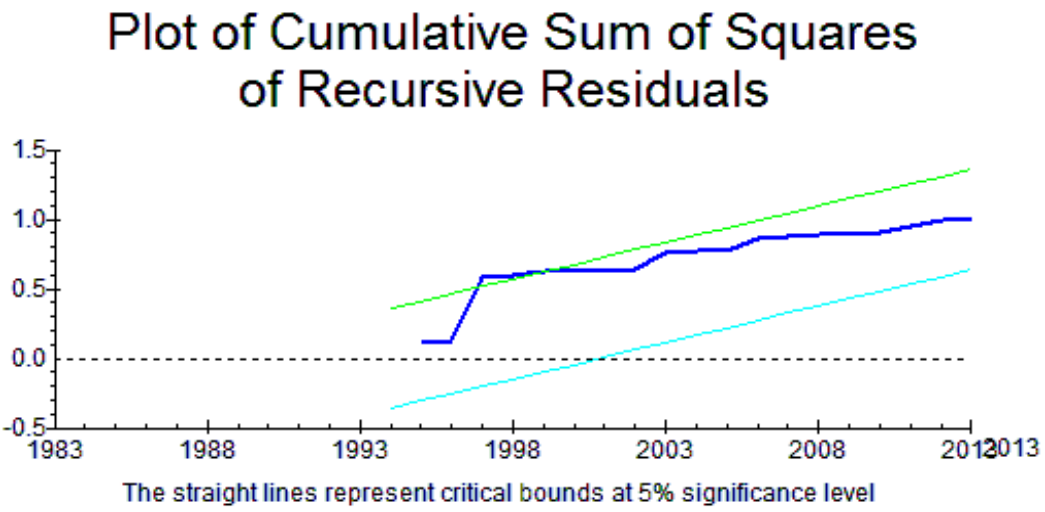

Figure 11: Plot of Cumulative Sum of Squares of Recursive Residuals

4.14 Result and discussion

From the empirical analysis of this study several policies and lessons can be drawn from the findings. Essentially, there is a need for policy intervention in terms of Nigerian government fiscal operations and external sector performance. From the data analyzed, variables reflect frequent deficits in the budget and current account balance in Nigeria. The effect of expansionary fiscal policy has varied implications on the performance of the Nigerian economy within the period of the study, the real growth rate of the economy have been hampered by policies without accelerating the growth rate of the economy. The findings show that budget deficit affects current account balance in Nigeria. Going by this, the simple analysis of National saving and investment equation, hold that Nigeria's foreign-exchange reserves have drastically dwindled and fluctuating with external (foreign currency) debts, coupled with internal debts the country is actually operating in the negative (see figure 1,2 and 3).

Figure 1. Shows the Net foreign assets, having surplus in the current account of the country's accumulate net foreign assets (NFA). It is evident from the figure that Nigeria's almost if not entirely running current account deficit, as the external reserve is deflating see Figure 3, while the figure shows that net foreign liabilities is accumulating external debts (foreign currency accumulation) and internal debts add tempo, running deficit in the

current account add up to the foreign liabilities. Figure 3, shows how the external reserve is deflating over the period, this show how the country absorbs the shock of dwindling oil price, a sign of danger for a very gloomy economy.

Therefore fiscal discipline is necessary to bring Nigerian ever growing budget deficits to a minimal level, Keynesian proposition support the consistence financing of government various project to stimulate economic growth. But most of the finances in Nigeria are caused by mismanagement of public funds due to corruption. Also, surplus recorded in the current account balance of the balance of payment is mostly contributed by oil export considering the size of oil export. It becomes necessary for the government to consider diversifying the economy reliance on oil export since any shock in the price of crude oil will transmit to country's fiscal position. furthermore, the calls from various quarters for Nigeria to shift its economic base from oil to agriculture, but easy access to oil revenue is a major deterrence to any meaningful change of course, shale oil market will dwindle further in the year 2015 and beyond, as the crude oil price drop to less than $50 per barrel in very short period, this is because United states' emergence as a dominant player in oil and gas production coupled with advancement in technology are two great factors that will dwarf revenues of oil in Nigeria a 95% oil related economy.

Other variables have also been seriously affected, exchange rate Nigerian currency increase in relation to foreign currencies, also this positive relation of interest rate and real exchange rate effect investment to fall then the capital account affected by the higher demand of the domestic assets which affect the current account balance, implications of this is that Nigeria's products become dearer in relation to foreign products, which discourage the exportation of Nigerian products and increase the importation of foreign products to Nigeria's market due to Naira appreciation, this has multiplier effect on, Nigeria external sector worsening the trade balance of payment and consequently reduction of foreign reserve.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS FOR FURTHER STUDIES

5.1 Introduction

The chapter summarizes the major findings of the work; conclusion and offer recommendations for further study on how to provide useful guidance in exploring a viable strategies for a more conducive macroeconomic environment for growth, and give alternative way for further research studies on the topic.

5.2 Summary of the major findings

Essentially, this study analyzed the effects of budget deficit on Gross Domestic Product (GDP) and its impact on Current Account Balance (CAB) in Nigeria. It involves estimating the five equations of which each being dependent and independent variables of which among the equations only one showed long run relationship, which use to estimate by ARDL approach while the others estimate using OLS. Specifically from 1981 – 2013, the essence was to examine the response of dependent variable Real Gross Domestic Product (RGDP) how they are determined by the simultaneous interaction with independent variables (Government budget balance, Current account balance, interest rate as well as effective real exchange rate). Therefore, in the empirical exercise, ADF and PP tests method used to determine the stationarity level, and all the variables are stationary at level I(0)except effective real exchange rate which is stationary at first difference I(1)

After performing the unit root test it established that only equation one of the models have long run relationship. Hence long run equation can be modelled. In the empirical literature review it has been shown that the effect of budget deficit on RGDP and its impact on current account balance can be positive, negative or even insignificant, long run relationship among the variables revealed by the empirical analysis. Thus, Government budget balance is found to be a major player together with Real effective exchange rate, but the impact of expansionary fiscal policy significantly affect Current account balance which conform to the theoretical explanation asserted by Keynes, that government budget balance exact negatively to rate of real growth of the economy which necessitate the increment of the net foreign liabilities. Hence, the period characterize the outflow of capital, depletion in reserve, continued naira depreciation and persistent price hike (inflation) couple with instability in the financial market system. Appropriate measures have to be taken to fine tune the economy to perform optimally and this can only be done with appropriate policies.

5.3 Conclusion

This research work analyzed the effects of budget deficit on the real gross domestic product in Nigeria from 1981 – 2013. In line with the findings of the study, it is concluded that budget deficit is the major player among the microeconomic variables under review.

5.4 Recommendations for further studies

Fundamentally, various policy lessons can be drawn from the findings of this study. They may include policy intervention in terms of federal government fiscal operations and external sector performance, historical data on these variables reflects frequent deficits in the budget and balance in the current account. This is also empirically determined from the analysis. Prescribing the minimal fiscal responsibility will bring the ever growing budget deficits to bearest minimal level, the Keynesian proposition support the effect of expansionary fiscal policy to stimulate economic growth, being a country that is solely dependent on crude oil revenue any shock in the global price will affect Nigeria fiscal operation. The consequences of this shock on expenditure trend tend to be strongly

correlated with revenue trend which have serious implications to growth rate potential of the economy.

It becomes necessary for the government to consider diversifying the economy and reduce reliance on oil export since any shock in the price of oil will affect the country's fiscal position and reserve potential of the country, hence the existence of a long run relationship between budget deficit, other macro-variables and current account balance in Nigeria presupposes that development of a strong financial sector to finance the fiscal deficits and diversification of export product are essential for the country growth prospect and may serve to reduce rising budget deficits and current account imbalance

- To ensure the effective and efficient application of domestic policies would sustain the macroeconomic stability.
- To fortify the linkage between monetary and fiscal policies.
- to diversify the productive base of the economy

This finding is in line with Egwaikhide (1997) which shows a strong correlation between budget deficit and the current account balance, also the finding of Awe and Funlayo (2014) which shows a long run relationship between budget deficit and macro variables, except budget deficit and interest rate which have negative relation with GDP.

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APPENDIX I

YEARS	RGDP	CAB	GBB	INT	REER
1981	251052.3	(3,998.40)	(3,902.10)	6.00	0.610
1982	246726.6	(4,879.50)	(6,104.10)	8.00	0.673
1983	230380.8	(3,137.90)	(3,364.50)	8.00	0.724
1984	227254.7	44.10	(2,660.40)	10.00	0.765
1985	253013.3	2,215.40	(3,039.70)	10.00	0.894
1986	257784.4	(2,999.10)	(8,254.30)	10.00	2.021
1987	255997	(295.30)	(5,889.70)	12.75	4.018
1988	275409.6	(965.70)	(12,160.90)	12.75	4.537
1989	295090.8	10,684.10	(15,134.70)	18.50	7.392
1990	328606.1	44,731.20	(22,116.10)	18.50	8.038
1991	328644.5	12,655.40	(35,755.20)	14.50	9.910
1992	337288.6	39,422.80	(39,532.50)	17.50	17.298
1993	342540.5	(19,488.70)	(65,157.70)	26.00	22.051
1994	345228.5	(52,304.30)	(70,270.60)	13.50	21.886
1995	352646.2	(186,084.80)	1,000.00	13.50	21.886
1996	367218.1	376,024.00	32,049.40	13.50	21.886
1997	377830.8	263,295.70	(5,000.00)	13.50	21.886
1998	388468.1	(331,429.70)	(133,389.30)	14.31	21.886
1999	393107.2	46,336.20	(285,104.70)	18.00	92.693
2000	412332	713,023.90	(103,777.30)	13.50	102.105
2001	431783.2	242,901.30	(221,048.90)	14.31	111.943
2002	451785.7	(117,037.30)	(301,401.60)	19.00	120.970
2003	495007.2	704,560.00	(202,724.70)	15.75	129.357
2004	527576	2,056,326.30	(172,601.30)	15.00	133.500
2005	561931.4	4,891,744.45	(161,406.30)	13.00	132.147
2006	595821.6	4,698,047.08	(101,397.50)	12.25	128.652
2007	634251.3	3,478,374.82	(117,237.10)	8.75	125.833
2008	672202.6	3,450,585.67	(47,378.50)	9.81	118.567
2009	718977.3	2,057,949.33	(810,008.46)	7.44	148.902
2010	776332.2	1,993,003.13	(1,105,439.78)	6.13	150.298
2011	834000.8	1,336,791.68	(1,158,518.40)	9.19	153.862
2012	888893	2,957,780.9	(975,632.01)	12.00	157.499
2013	950114	3,143,772.01	(1,153,432.02)	12.00	157.311

Source: Central Bank of Nigeria 2013: Statistical Bulletin

PERCENTAGE
GROWTH RATE

YEARS	RGDP	RCAB	RGBB	RINT	REER
1981	----	-------	--------	-------	--------
1982	-1.72	22.04	56.43	33.33	10.31
1983	-6.63	-35.69	-44.88	-	7.61
1984	-1.36	-101.41	-20.93	25	5.63
1985	11.33	4,923.58	14.26	-	16.85
1986	1.89	-235.38	171.55	-	126.07
1987	-0.69	-90.15	-28.65	27.5	98.85
1988	7.58	227.02	106.48	-	12.91
1989	7.15	-1,206.36	24.45	45.1	62.93
1990	11.36	318.67	46.13	-	8.74
1991	0.012	-71.71	61.67	-21.62	23.29
1992	2.63	211.51	10.56	20.69	74.56
1993	1.56	-149.44	64.82	48.57	27.48
1994	0.78	168.38	7.85	-48.08	-0.75
1995	2.15	255.77	-101.42	-	-
1996	4.13	-302.07	3,104.94	-	-
1997	2.89	-29.98	-115.6	-	-
1998	2.82	-225.88	2,567.79	6	-
1999	1.19	-113.98	113.74	25.79	323.53
2000	4.89	1,438.81	-63.6	-25	10.15
2001	4.71	-65.93	113	6	9.64
2002	4.63	-148.18	36.35	32.77	8.06
2003	9.57	-702	-32.74	-17.11	6.93
2004	6.58	191.86	-14.86	-4.76	3.2
2005	6.51	137.89	-6.49	-13.33	-1.01
2006	11.45	-3.96	-37.18	-5.77	-2.65
2007	6.45	-25.96	15.62	-28.57	-2.19
2008	5.98	-0.8	-59.59	12.11	-5.77
2009	6.96	-40.36	1,609.65	-24.16	25.58
2010	7.98	-3.16	36.47	-17.61	0.94
2011	7.43	-32.93	4.8	49.92	2.37
2012	6.58	121.25	-15.79	30.58	2.36
2013	6.89	6.29	18.22	-	-0.12

Author Compilation

DATA GROWTH RATE

YEARS	RGDP	INT	GBB	CAB	REER
1981	0	0	0	0	0.093611
1982	-0.01753	0.25	0.360741	0.180572	0.070442
1983	-0.07095	0	-0.81427	-0.55502	0.053595
1984	-0.01376	0.2	-0.26466	72.1542	0.144295
1985	0.101807	0	0.124782	0.980094	0.557645
1986	0.018508	0	0.631743	1.738688	0.497013
1987	-0.00698	0.215686	-0.40148	-9.15611	0.114393
1988	0.070486	0	0.515686	0.694211	0.386228
1989	0.066695	0.310811	0.196489	1.090387	0.080368
1990	0.101992	0	0.31567	0.761149	0.1889
1991	0.000117	-0.27586	0.381458	-2.53455	0.427101
1992	0.025628	0.171429	0.095549	0.678983	0.215546
1993	0.015332	0.326923	0.39328	3.022854	-0.00754
1994	0.007786	-0.92593	0.07276	0.627398	0
1995	0.021034	0	71.2706	0.718922	0
1996	0.039682	0	0.968798	1.494875	0
1997	0.028088	0	7.40988	-0.42814	0
1998	0.027383	0.056604	0.962516	1.794424	0.763887
1999	0.011801	0.205	0.532139	8.152716	0.09218
2000	0.046625	-0.33333	-1.74727	0.935015	0.087884
2001	0.045049	0.056604	0.530523	-1.93545	0.074622
2002	0.044274	0.246842	0.266597	3.075418	0.064836
2003	0.087315	-0.20635	-0.48675	1.166114	0.031034
2004	0.061733	-0.05	-0.17453	0.65737	-0.01024
2005	0.061138	-0.15385	-0.06936	0.579633	-0.02717
2006	0.05688	-0.06122	-0.59182	-0.04123	-0.0224
2007	0.060591	-0.4	0.135107	-0.35064	-0.06128
2008	0.056458	0.108053	-1.47448	-0.00805	0.203725
2009	0.065057	-0.31855	0.941509	-0.67671	0.009288
2010	0.073879	-0.2137	0.267252	-0.03259	0.023164
2011	0.069147	0.332971	0.045816	-0.49089	0.023092
2012	0.061753	0.234167	-0.18745	0.548042	-0.0012
2013	0.064435	0	0.154149	0.059162	0

Author Computation

APPENDIX II:

SCHWARZ BAYESIAN CRITERION

Autoregressive Distributed Lag Estimates
ARDL(2,1,1,1) selected

Dependent variable is RGDP
31 observations used for estimation from 1983 to 2013

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
RGDP(-1)	.46470	.21289	2.1828[.041]
RGDP(-2)	-.14737	.22528	-.65413[.520]
CAB	.0015426	.6950E-3	2.2195[.038]
CAB(-1)	-.8560E-3	.7968E-3	-1.0743[.295]
GBB	-.2478E-5	.6311E-3	-.0039270[.997]
GBB(-1)	.1270E-3	.4648E-3	.27320[.788]
INT	.015752	.024765	.63605[.532]
INT(-1)	.0090409	.031877	.28362[.780]
REER	-.010317	.038130	-.27057[.789]
C	.0036956	.018053	.20470[.840]
T	.0014328	.9520E-3	1.5050[.148]

R-Squared	.50797	R-Bar-Squared	.26195
S.E. of Regression	.031324	F-stat. F(10, 20)	2.0648[.080]
Mean of Dependent Variable	.041903	S.D. of Dependent Variable	.036461
Residual Sum of Squares	.019623	Equation Log-likelihood	70.1708
Akaike Info. Criterion	59.1708	Schwarz Bayesian Criterion	51.2838
DW-statistic	1.8893		

Diagnostic Tests

Test Statistics	LM Version	F Version
A:Serial Correlation	CHSQ(1)= 1.7860[.181]	F(1, 19)= 1.1616[.295]
B:Functional Form	CHSQ(1)= .59125[.442]	F(1, 19)= .36942[.551]
C:Normality	CHSQ(2)= 2.3411[.310]	Not applicable
D:Heteroscedasticity	CHSQ(1)= 2.6281[.105]	F(1, 29)= 2.6863[.112]

A:Lagrange multiplier test of residual serial correlation
B:Ramsey's RESET test using the square of the fitted values
C:Based on a test of skewness and kurtosis of residuals
D:Based on the regression of squared residuals on squared fitted values

Estimated Long Run Coefficients using the ARDL Approach
ARDL(2,1,1,1) selected

Dependent variable is RGDP
31 observations used for estimation from 1983 to 2013

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
CAB	.0010057	.0018496	.54377[.593]
GBB	.1824E-3	.0012113	.15055[.882]
INT	.036317	.070774	.51315[.613]
REER	-.015113	.057724	-.26181[.796]
C	.0054134	.026555	.20386[.841]

```
T                          .0020988          .0011236             1.8680[.076]
*******************************************************************************
```

Error Correction Representation for the Selected ARDL Model
ARDL(2,1,1,1) selected

```
*******************************************************************************
Dependent variable is dRGDP
31 observations used for estimation from 1983 to 2013
*******************************************************************************
Regressor              Coefficient       Standard Error         T-Ratio[Prob]
dRGDP1                     .14737            .22528             .65413[.520]
dCAB                     .0015426          .6950E-3             2.2195[.037]
dGBB                    -.2478E-5          .6311E-3          -.0039270[.997]
dINT                       .015752           .024765            .63605[.531]
dREER                     -.010317           .038130           -.27057[.789]
dC                         .0036956          .018053            .20470[.840]
dT                         .0014328          .9520E-3           1.5050[.146]
ecm(-1)                    -.68267            .27189           -2.5108[.020]
*******************************************************************************
List of additional temporary variables created:
dRGDP = RGDP-RGDP(-1)
dRGDP1 = RGDP(-1)-RGDP(-2)
dCAB = CAB-CAB(-1)
dGBB = GBB-GBB(-1)
dINT = INT-INT(-1)
dREER = REER-REER(-1)
dC = C-C(-1)
dT = T-T(-1)
ecm = RGDP -.0010057*CAB -.1824E-3*GBB  -.036317*INT +  .015113*REER -.005413
4*C -.0020988*T
*******************************************************************************
R-Squared                      .60921   R-Bar-Squared                    .41381
S.E. of Regression            .031324   F-stat.    F(  7,  23)    4.4541[.003]
Mean of Dependent Variable   .0026441   S.D. of Dependent Variable      .040912
Residual Sum of Squares       .019623   Equation Log-likelihood         70.1708
Akaike Info. Criterion        59.1708   Schwarz Bayesian Criterion      51.2838
DW-statistic                   1.8893
*******************************************************************************
R-Squared and R-Bar-Squared measures refer to the dependent variable
dRGDP and in cases where the error correction model is highly
restricted, these measures could become negative.
```

APPENDIX III

(GCF, GDS AND GFCF % GDP) NFA AND NFA FOR NIGERIA: WORLD BANK

Years	GCF(% of GDP	GDS(%GDP)	GFCF(%GDP)	NFF(NFL$US)IDA	NFA(LCU)
1981	34	30	35	-398,000	2,556,247,142
1982	30	28	32	-399,000	1,057,254,948
1983	22	24	23	-399,000	807,633,352
1984	12	20	14	-399,000	1,422,934,796
1985	11	20	12	-1,196,000	1,815,918,759
1986	16	19	15	-1,196,000	4,463,376,534
1987	13	25	14	-1,196,000	6,864,857,386
1988	10	20	12	-1,196,000	7,974,192,436
1989	12	39	12	-1,196,000	18,296,224,652
1990	14	32	14	6,044,000	41,316,247,751
1991	14	32	14	21,595,000	54,054,887,476
1992	13	27	13	22,976,000	9,172,099,305
1993	14	23	14	36,521,000	8,584,315,773
1994	11	18	11	58,881,000	-4,361,610,425
1995	7	19	7	84,948,000	61,209,680,965
1996	7	14	7	89,210,000	193,687,122,498
1997	9	15	8	81,613,000	189,613,009,977
1998	9	2	9	133,798,000	203,226,345,184
1999	7	19	7	72,184,000	646,203,103,344
2000	7	39	7	50,982,000	1,164,931,110,162
2001	8	17	8	1,283,000	1,325,342,270,723
2002	7	16	7	7,631,000	1,255,211,057,109
2003	10	4	10	46,059,000	1,356,362,881,310
2004	7	19	7	137,201,000	2,612,377,430,609
2005	5	18	5	245,935,000	3,865,390,439,200
2006	8	30	8	342,676,000	6,188,682,790,435
2007	9	12	9	315,394,000	7,310,443,577,853
2008	8	23	8	333,041,000	8,597,230,047,920
2009	12	12	12	475,601,000	7,287,924,944,055
2010	17	25	17	975,392,000	6,195,140,945,863
2011	16	26	16	604,255,000	6,643,739,390,289
2012	15	33	15	479,310,000	8,715,631,856,716
2013	15	20	14	629,890,000	8,117,581,269,479

Sources: databank.worldbank.org

APPENDIXES IV

UNIT ROOTS AT LEVEL ADF

RGDP

Null Hypothesis: RGDP has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic based on SIC, MAXLAG=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.505982	0.0059
Test critical values:	1% level	-4.284580	
	5% level	-3.562882	
	10% level	-3.215267	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RGDP)
Method: Least Squares
Date: 11/26/14 Time: 12:41
Sample (adjusted): 1983 2013
Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RGDP(-1)	-0.832512	0.184757	-4.505982	0.0001
C	0.990774	1.403730	0.705815	0.4861
@TREND(1981)	0.174150	0.085285	2.041977	0.0507

R-squared	0.421694	Mean dependent var	0.277742
Adjusted R-squared	0.380386	S.D. dependent var	4.618089
S.E. of regression	3.635154	Akaike info criterion	5.510946
Sum squared resid	370.0016	Schwarz criterion	5.649718
Log likelihood	-82.41966	F-statistic	10.20864
Durbin-Watson stat	1.896133	Prob(F-statistic)	0.000468

RCAB

Null Hypothesis: RCAB has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic based on SIC, MAXLAG=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.215920	0.0001
Test critical values:	1% level	-4.284580	
	5% level	-3.562882	
	10% level	-3.215267	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RCAB)
Method: Least Squares
Date: 11/26/14 Time: 12:44
Sample (adjusted): 1983 2013
Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RCAB(-1)	-1.156774	0.186099	-6.215920	0.0000
C	571.6049	385.5362	1.482623	0.1493
@TREND(1981)	-23.92660	19.87182	-1.204047	0.2387

R-squared	0.579860	Mean dependent var	-0.508065
Adjusted R-squared	0.549850	S.D. dependent var	1450.695
S.E. of regression	973.3185	Akaike info criterion	16.69107
Sum squared resid	26525770	Schwarz criterion	16.82984
Log likelihood	-255.7115	F-statistic	19.32221
Durbin-Watson stat	2.045446	Prob(F-statistic)	0.000005

Null Hypothesis: REER has a unit root
Exogenous: Constant
Lag Length: 6 (Automatic based on SIC, MAXLAG=6)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.856356	0.0758
Test critical values:	1% level	-4.004425	
	5% level	-3.098896	
	10% level	-2.690439	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20

observations and may not be accurate for a sample size of 14

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(REER)
Method: Least Squares
Date: 12/01/14 Time: 12:41
Sample (adjusted): 1989 2013
Included observations: 14 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REER(-1)	-0.496384	0.173782	-2.856356	0.0289
D(REER(-1))	-1.030765	0.240688	-4.282567	0.0052
D(REER(-2))	-0.810676	0.205268	-3.949357	0.0075
D(REER(-3))	-0.519118	0.192665	-2.694407	0.0358
D(REER(-4))	-0.442030	0.115569	-3.824827	0.0087
D(REER(-5))	-0.553690	0.161154	-3.435785	0.0139
D(REER(-6))	0.048138	0.040472	1.189419	0.2792
C	1.908665	5.001772	0.381598	0.7159

R-squared	0.928036	Mean dependent var	-0.912143
Adjusted R-squared	0.844079	S.D. dependent var	31.49426
S.E. of regression	12.43610	Akaike info criterion	8.174643
Sum squared resid	927.9391	Schwarz criterion	8.539819
Log likelihood	-49.22250	F-statistic	11.05363
Durbin-Watson stat	1.825307	Prob(F-statistic)	0.004686

Null Hypothesis: RGBB has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.273363	0.0000
Test critical values:	1% level	-3.661661	
	5% level	-2.960411	
	10% level	-2.619160	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RGBB)
Method: Least Squares

Date: 12/01/14 Time: 12:43
Sample (adjusted): 1983 2013
Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RGBB(-1)	-1.151955	0.183626	-6.273363	0.0000
C	282.1049	143.5545	1.965141	0.0590

R-squared	0.575745	Mean dependent var	-1.232581
Adjusted R-squared	0.561115	S.D. dependent var	1145.218
S.E. of regression	758.6886	Akaike info criterion	16.16340
Sum squared resid	16692642	Schwarz criterion	16.25592
Log likelihood	-248.5327	F-statistic	39.35509
Durbin-Watson stat	1.895933	Prob(F-statistic)	0.000001

Null Hypothesis: RINT has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic based on SIC, MAXLAG=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.193455	0.0055
Test critical values:	1% level	-3.886751	
	5% level	-3.052169	
	10% level	-2.666593	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 17

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RINT)
Method: Least Squares
Date: 12/01/14 Time: 12:44
Sample (adjusted): 1992 2012
Included observations: 17 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RINT(-1)	-1.197981	0.285679	-4.193455	0.0008
C	2.984430	7.121993	0.419044	0.6811

R-squared	0.539666	Mean dependent var	-0.110588

Adjusted R-squared	0.508977	S.D. dependent var	41.68028
S.E. of regression	29.20662	Akaike info criterion	9.696799
Sum squared resid	12795.40	Schwarz criterion	9.794824
Log likelihood	-80.42279	F-statistic	17.58506
Durbin-Watson stat	1.887807	Prob(F-statistic)	0.000783

UNIT ROOT TEST AT LEVEL (PP TEST)

Null Hypothesis: RGDP has a unit root
Exogenous: Constant
Bandwidth: 1 (Newey-West using Bartlett kernel)

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-3.770329	0.0077
Test critical values:	1% level	-3.661661	
	5% level	-2.960411	
	10% level	-2.619160	

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

Residual variance (no correction)	13.71294
HAC corrected variance (Bartlett kernel)	12.32635

Phillips-Perron Test Equation
Dependent Variable: D(RGDP)
Method: Least Squares
Date: 12/06/14 Time: 09:16
Sample (adjusted): 1983 2013
Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RGDP(-1)	-0.637412	0.166552	-3.827105	0.0006
C	3.090416	1.006474	3.070538	0.0046

R-squared	0.335575	Mean dependent var	0.277742
Adjusted R-squared	0.312663	S.D. dependent var	4.618089
S.E. of regression	3.828663	Akaike info criterion	5.585249
Sum squared resid	425.1011	Schwarz criterion	5.677764
Log likelihood	-84.57136	F-statistic	14.64673
Durbin-Watson stat	2.002866	Prob(F-statistic)	0.000638

RCAB

Null Hypothesis: RCAB has a unit root
Exogenous: Constant

Bandwidth: 2 (Newey-West using Bartlett kernel)

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.071260	0.0000
Test critical values:	1% level	-3.661661	
	5% level	-2.960411	
	10% level	-2.619160	

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

Residual variance (no correction)	899973.2
HAC corrected variance (Bartlett kernel)	845439.4

Phillips-Perron Test Equation
Dependent Variable: D(RCAB)
Method: Least Squares
Date: 12/06/14 Time: 09:17
Sample (adjusted): 1983 2013
Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RCAB(-1)	-1.116285	0.184449	-6.051999	0.0000
C	159.0648	178.1257	0.892992	0.3792

R-squared	0.558107	Mean dependent var	-0.508065
Adjusted R-squared	0.542869	S.D. dependent var	1450.695
S.E. of regression	980.8365	Akaike info criterion	16.67703
Sum squared resid	27899169	Schwarz criterion	16.76954
Log likelihood	-256.4940	F-statistic	36.62669
Durbin-Watson stat	2.015730	Prob(F-statistic)	0.000001

RGBB

Null Hypothesis: RGBB has a unit root
Exogenous: Constant
Bandwidth: 2 (Newey-West using Bartlett kernel)

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.226221	0.0000
Test critical values:	1% level	-3.661661	

	5% level	-2.960411
	10% level	-2.619160

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

Residual variance (no correction)	538472.3
HAC corrected variance (Bartlett kernel)	688167.2

Phillips-Perron Test Equation
Dependent Variable: D(RGBB)
Method: Least Squares
Date: 12/06/14 Time: 09:18
Sample (adjusted): 1983 2013
Included observations: 31 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RGBB(-1)	-1.151955	0.183626	-6.273363	0.0000
C	282.1049	143.5545	1.965141	0.0590

R-squared	0.575745	Mean dependent var	-1.232581
Adjusted R-squared	0.561115	S.D. dependent var	1145.218
S.E. of regression	758.6886	Akaike info criterion	16.16340
Sum squared resid	16692642	Schwarz criterion	16.25592
Log likelihood	-248.5327	F-statistic	39.35509
Durbin-Watson stat	1.895933	Prob(F-statistic)	0.000001

RINT

Null Hypothesis: RINT has a unit root
Exogenous: Constant
Bandwidth: 3 (Newey-West using Bartlett kernel)

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-4.177265	0.0056
Test critical values:	1% level	-3.886751	
	5% level	-3.052169	
	10% level	-2.666593	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 17

Residual variance (no correction)	752.6708
HAC corrected variance (Bartlett kernel)	626.3389

Phillips-Perron Test Equation
Dependent Variable: D(RINT)
Method: Least Squares
Date: 12/06/14 Time: 09:20
Sample (adjusted): 1992 2012
Included observations: 17 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RINT(-1)	-1.197981	0.285679	-4.193455	0.0008
C	2.984430	7.121993	0.419044	0.6811

R-squared	0.539666	Mean dependent var	-0.110588
Adjusted R-squared	0.508977	S.D. dependent var	41.68028
S.E. of regression	29.20662	Akaike info criterion	9.696799
Sum squared resid	12795.40	Schwarz criterion	9.794824
Log likelihood	-80.42279	F-statistic	17.58506
Durbin-Watson stat	1.887807	Prob(F-statistic)	0.000783

REER

Null Hypothesis: REER has a unit root
Exogenous: Constant
Bandwidth: 2 (Newey-West using Bartlett kernel)

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-8.215795	0.0000
Test critical values:	1% level	-3.711457	
	5% level	-2.981038	
	10% level	-2.629906	

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

Residual variance (no correction)	1044.302
HAC corrected variance (Bartlett kernel)	1543.879

Phillips-Perron Test Equation
Dependent Variable: D(REER)
Method: Least Squares
Date: 12/06/14 Time: 09:20
Sample (adjusted): 1983 2013
Included observations: 26 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
REER(-1)	-0.933160	0.099314	-9.396085	0.0000
C	17.86233	7.362939	2.425978	0.0232

R-squared	0.786261	Mean dependent var	-12.87346
Adjusted R-squared	0.777355	S.D. dependent var	71.28330
S.E. of regression	33.63521	Akaike info criterion	9.942828
Sum squared resid	27151.86	Schwarz criterion	10.03960
Log likelihood	-127.2568	F-statistic	88.28642
Durbin-Watson stat	1.333687	Prob(F-statistic)	0.000000

UNIT ROOT TEST AT 1ST DIFFERENCE (ADF TEST)

Null Hypothesis: D(RGDP) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic based on SIC, MAXLAG=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.837256	0.0000
Test critical values:	1% level	-4.309824	
	5% level	-3.574244	
	10% level	-3.221728	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RGDP,2)
Method: Least Squares
Date: 12/01/14 Time: 12:48
Sample (adjusted): 1985 2013
Included observations: 29 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RGDP(-1))	-1.934775	0.282975	-6.837256	0.0000
D(RGDP(-1),2)	0.460456	0.170235	2.704831	0.0121
C	2.026021	1.814301	1.116695	0.2747
@TREND(1981)	-0.076678	0.090674	-0.845640	0.4058

R-squared	0.739749	Mean dependent var	-0.171034
Adjusted R-squared	0.708519	S.D. dependent var	7.479525
S.E. of regression	4.038119	Akaike info criterion	5.756877
Sum squared resid	407.6601	Schwarz criterion	5.945470
Log likelihood	-79.47472	F-statistic	23.68706
Durbin-Watson stat	1.980182	Prob(F-statistic)	0.000000

Null Hypothesis: D(RCAB) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 3 (Automatic based on SIC, MAXLAG=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.364050	0.0009
Test critical values:	1% level	-4.339330	

	5% level	-3.587527
	10% level	-3.229230

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RCAB,2)
Method: Least Squares
Date: 12/01/14 Time: 12:48
Sample (adjusted): 1987 2013
Included observations: 27 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RCAB(-1))	-2.257288	0.420818	-5.364050	0.0000
D(RCAB(-1),2)	0.809992	0.299519	2.704311	0.0133
D(RCAB(-2),2)	0.482561	0.184470	2.615934	0.0161
D(RCAB(-3),2)	0.278327	0.085485	3.255856	0.0038
C	-330.1776	298.8086	-1.104980	0.2817
@TREND(1981)	13.68441	14.16345	0.966178	0.3450

R-squared	0.907060	Mean dependent var	186.8148
Adjusted R-squared	0.884932	S.D. dependent var	1548.179
S.E. of regression	525.1683	Akaike info criterion	15.55844
Sum squared resid	5791837.	Schwarz criterion	15.84641
Log likelihood	-204.0390	F-statistic	40.99065
Durbin-Watson stat	2.459338	Prob(F-statistic)	0.000000

Null Hypothesis: D(REER) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 4 (Automatic based on SIC, MAXLAG=6)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.315496	0.0006
Test critical values:	1% level	-4.667883	
	5% level	-3.733200	
	10% level	-3.310349	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 16

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(REER,2)
Method: Least Squares
Date: 12/01/14 Time: 12:49
Sample (adjusted): 1988 2013
Included observations: 16 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(REER(-1))	-3.117187	0.493578	-6.315496	0.0001
D(REER(-1),2)	1.404830	0.366013	3.838200	0.0040
D(REER(-2),2)	0.673016	0.261786	2.570865	0.0301
D(REER(-3),2)	0.471068	0.158236	2.977004	0.0155
D(REER(-4),2)	0.028298	0.062075	0.455869	0.6593
C	-26.65421	12.38503	-2.152131	0.0598
@TREND(1981)	0.898887	0.552175	1.627903	0.1380

R-squared	0.935906	Mean dependent var	0.015000
Adjusted R-squared	0.893176	S.D. dependent var	59.98047
S.E. of regression	19.60397	Akaike info criterion	9.088977
Sum squared resid	3458.840	Schwarz criterion	9.426984
Log likelihood	-65.71182	F-statistic	21.90301
Durbin-Watson stat	2.591554	Prob(F-statistic)	0.000069

Null Hypothesis: D(RGBB) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic based on SIC, MAXLAG=7)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-12.88170	0.0000
Test critical values:	1% level	-4.296729	
	5% level	-3.568379	
	10% level	-3.218382	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RGBB,2)
Method: Least Squares
Date: 12/01/14 Time: 12:50
Sample (adjusted): 1984 2013
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RGBB(-1))	-1.719917	0.133516	-12.88170	0.0000
C	101.8711	344.8673	0.295392	0.7700
@TREND(1981)	-5.800046	17.66552	-0.328326	0.7452

R-squared	0.860059	Mean dependent var	4.510667
Adjusted R-squared	0.849693	S.D. dependent var	2159.568
S.E. of regression	837.2519	Akaike info criterion	16.39277
Sum squared resid	18926750	Schwarz criterion	16.53289
Log likelihood	-242.8915	F-statistic	82.96936
Durbin-Watson stat	2.337293	Prob(F-statistic)	0.000000

Null Hypothesis: D(RINT) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 1 (Automatic based on SIC, MAXLAG=4)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-6.776602	0.0007
Test critical values:	1% level	-4.886426	
	5% level	-3.828975	
	10% level	-3.362984	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 13

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RINT,2)
Method: Least Squares
Date: 12/01/14 Time: 12:50
Sample (adjusted): 1994 2012
Included observations: 13 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RINT(-1))	-2.560393	0.377828	-6.776602	0.0001
D(RINT(-1),2)	0.705633	0.245594	2.873167	0.0184
C	-84.81703	38.26536	-2.216548	0.0539
@TREND(1981)	3.508473	1.529242	2.294256	0.0474

R-squared	0.900377	Mean dependent var	-7.160000
Adjusted R-squared	0.867169	S.D. dependent var	68.29204

S.E. of regression	24.88972	Akaike info criterion	9.514447
Sum squared resid	5575.485	Schwarz criterion	9.688278
Log likelihood	-57.84391	F-statistic	27.11342
Durbin-Watson stat	2.057454	Prob(F-statistic)	0.000077

UNIT ROOT TEST AT 1ST DIFFERENCE (PP TEST)

Null Hypothesis: D(RGDP) has a unit root
Exogenous: Constant
Bandwidth: 13 (Newey-West using Bartlett kernel)

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-11.09385	0.0000
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

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

Residual variance (no correction)	18.12192
HAC corrected variance (Bartlett kernel)	4.912909

Phillips-Perron Test Equation
Dependent Variable: D(RGDP,2)
Method: Least Squares
Date: 12/01/14 Time: 13:14
Sample (adjusted): 1984 2013
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RGDP(-1))	-1.326813	0.174205	-7.616379	0.0000
C	0.541085	0.805937	0.671374	0.5075

R-squared	0.674454	Mean dependent var	0.174000
Adjusted R-squared	0.662827	S.D. dependent var	7.588523
S.E. of regression	4.406398	Akaike info criterion	5.868333
Sum squared resid	543.6577	Schwarz criterion	5.961746
Log likelihood	-86.02499	F-statistic	58.00922
Durbin-Watson stat	2.232347	Prob(F-statistic)	0.000000

Null Hypothesis: D(RCAB) has a unit root
Exogenous: Constant
Bandwidth: 16 (Newey-West using Bartlett kernel)

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-23.86311	0.0001
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

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

Residual variance (no correction)	1518215.
HAC corrected variance (Bartlett kernel)	146616.0

Phillips-Perron Test Equation
Dependent Variable: D(RCAB,2)
Method: Least Squares
Date: 12/01/14 Time: 13:15
Sample (adjusted): 1984 2013
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RCAB(-1))	-1.527824	0.160531	-9.517335	0.0000
C	3.144848	232.8567	0.013506	0.9893

R-squared	0.763872	Mean dependent var	-1.907667
Adjusted R-squared	0.755439	S.D. dependent var	2579.018
S.E. of regression	1275.406	Akaike info criterion	17.20426
Sum squared resid	45546459	Schwarz criterion	17.29767
Log likelihood	-256.0638	F-statistic	90.57967
Durbin-Watson stat	2.391917	Prob(F-statistic)	0.000000

Null Hypothesis: D(REER) has a unit root
Exogenous: Constant
Bandwidth: 23 (Newey-West using Bartlett kernel)

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-26.39065	0.0001
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

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

Residual variance (no correction)	1355.767
HAC corrected variance (Bartlett kernel)	149.8624

Phillips-Perron Test Equation
Dependent Variable: D(REER,2)
Method: Least Squares
Date: 12/01/14 Time: 13:16
Sample (adjusted): 1984 2013
Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(REER(-1))	-1.067336	0.108049	-9.878293	0.0000
C	-1.629175	7.968619	-0.204449	0.8399

R-squared	0.816024	Mean dependent var	11.89042
Adjusted R-squared	0.807661	S.D. dependent var	87.69068
S.E. of regression	38.45801	Akaike info criterion	10.21667
Sum squared resid	32538.41	Schwarz criterion	10.31484
Log likelihood	-120.6000	F-statistic	97.58068
Durbin-Watson stat	2.493796	Prob(F-statistic)	0.000000

Null Hypothesis: D(RGBB) has a unit root
Exogenous: Constant
Bandwidth: 2 (Newey-West using Bartlett kernel)

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-14.59119	0.0000
Test critical values:	1% level	-3.670170	
	5% level	-2.963972	
	10% level	-2.621007	

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

Residual variance (no correction)	633410.5
HAC corrected variance (Bartlett kernel)	472690.5

Phillips-Perron Test Equation
Dependent Variable: D(RGBB,2)
Method: Least Squares
Date: 12/01/14 Time: 13:16
Sample (adjusted): 1984 2013
Included observations: 30 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RGBB(-1))	-1.718886	0.131336	-13.08774	0.0000
C	0.372736	150.4058	0.002478	0.9980

R-squared	0.859500	Mean dependent var	4.510667
Adjusted R-squared	0.854483	S.D. dependent var	2159.568
S.E. of regression	823.8047	Akaike info criterion	16.33008
Sum squared resid	19002315	Schwarz criterion	16.42350
Log likelihood	-242.9513	F-statistic	171.2889
Durbin-Watson stat	2.329489	Prob(F-statistic)	0.000000

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

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-5.747184	0.0004
Test critical values:	1% level	-3.959148	
	5% level	-3.081002	
	10% level	-2.681330	

*MacKinnon (1996) one-sided p-values.
Warning: Probabilities and critical values calculated for 20 observations and may not be accurate for a sample size of 15

Residual variance (no correction)	1404.536
HAC corrected variance (Bartlett kernel)	540.3252

Phillips-Perron Test Equation
Dependent Variable: D(RINT,2)
Method: Least Squares
Date: 12/01/14 Time: 13:17
Sample (adjusted): 1993 2012

Included observations: 15 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RINT(-1))	-1.498267	0.306842	-4.882867	0.0003
C	-0.474847	10.65316	-0.044573	0.9651

R-squared	0.647146	Mean dependent var	-11.87267
Adjusted R-squared	0.620003	S.D. dependent var	65.30557
S.E. of regression	40.25690	Akaike info criterion	10.35201
Sum squared resid	21068.04	Schwarz criterion	10.44641
Log likelihood	-75.64004	F-statistic	23.84239
Durbin-Watson stat	2.168963	Prob(F-statistic)	0.000299