

# The Effects Of Macro Economic Variables, Savings- Investment Gap On Economic Growth In Nigeria (1981-2016)

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*Abstract: This study examined the impact of savings and investment gap on the economic growth of Nigeria within a period of 1981-2016. Secondary data were employed and it was sourced from CBN statistical bulletin and World Bank Development Indicator. The study employed diagnostic tests such as Augmented Dickey fuller for the stationarity of the series, Johansen Co-integration test for the long run relationship, Error Correction Modeling (ECM) for speed of adjustment and ARDL were employed as estimation technique. Dependent variable were proxied by gross domestic product while independent variable were proxy by gross fixed capital formation, gross domestic savings and savings and investment gap while interest rate and inflation rate were employed as control variables. The study revealed that series exhibits mixture of stationarity at level  $I(0)$  and first difference  $I(1)$ . There is also existence of long run relationship and the error correction model shows that GDP does not respond to speed of adjustment. Using ARDL, the study revealed that LGDS, LFCF, SIGN and INT at lag 1 are not significant at 5% and negatively signed. However, INF is positively signed and statistically significant at 5%. The study concludes that savings and investment gap does not impact positively on economic growth in Nigeria within the period of review. Therefore, the study recommends that, government should not relent in formulating and implementing policies that can encourage savings and induce investment, so as to engender economic growth in Nigeria.*

*Keywords: Interest Rate, Inflation Rate Saving and Investment Gap, Economic Growth, Gross Fixed Capital, Gross Domestic Savings*

## I. INTRODUCTION

Economic growth is the ability of an economy to increase its productive capacity through which it becomes more capable of producing additional units of goods and services. This economic growth is also seen as holly grain for economic policies. The growth or development of a country can be measured through various economic indicators such as Human Development Index (HDI), Total Factor Productivity (TFP) and Gross Domestic Product Growth Rate (GDP), (Smyth, 1995). Over a long period of time, the unsustainable and low level of economic growth in developing countries is producing difficulties for policy makers, professionals and Government.

The relationship between major macroeconomic variables such as GDP, CPI, PPI, Consumer Confidence Survey, Current Employment Statistics, Inflation, the Labor Market, currency exchange rate, and interest rate with GDP growth rate depends on the state of the economic development. High rate of growth rate without increase in the inflation is beneficial for good economic health of a country. Continuous increase in the rate of economic growth with the low level of inflation rate is one of the main objectives for policy makers to perform efficient role in economic policies formulation.

Inflation reflects the change in the price level, as the direct indicators are used as price indicators. Such a calculation is not easy, given the fact that the prices of various

goods rise at different levels and even some of them are reduced. For the calculation of inflation mainly economists use economic growth as a percentage of the price. The importance of studying the phenomenon of inflation is due to the fact that it affects the whole population which in modern economy is done to alleviate the impact of inflationary situations. Inflationary disorders are the result of wrong economic policies.

The importance of interest rate as a policy instrument lies in the fact that it can be used judiciously to foster meaningful economic growth. This is due to the effect; it has on savings, investment, output growth, employment, money supply and balance of payment. As a return for financial assets, interest rate serves as incentives to savers and by extension influences availability of savings. The primary role of interest rate is to help in the mobilization of financial resources and to ensure efficient utilization of such resource in the promotion of economic growth. Interest rate affects the level and pattern of investment on the other hand. It is crucial in financial institution/intermediation which involves transferring funds from surplus saving units in an economy to the deficit saving units. In general, interest rates are useful in financial market condition and it is a major tool of monetary policy. On the other hand, the importance of interest rate as a policy instrument lies in the fact that it can be used judiciously to foster meaningful economic growth. This is due to the effect it has on savings, investment, output growth, employment, money supply and balance of payment. As a return for financial assets, interest rate serves as incentives to savers, and by extension influences availability of savings.

It is established in economic theory that high savings, coupled with high levels of capital formation are prerequisites for long-term economic growth in any given country (Lewis 1954, 1955). High levels of savings are necessary to finance high levels of capital formation, which will lead to increased productivity and ultimately long-term economic growth. A country cannot be totally dependent on foreign investment to finance capital formation. For an emerging economy like Nigeria, saving and investment are two vital macroeconomic policy variables. These variables, *inter alia*, can be used not only for reaching the targeted level of growth but also for maintaining a sustainable level of growth with price stability and sufficient liquidity in Nigeria.

In the economic literature, it has been argued that domestic savings is one of the significant sources of funding public and private investment for a given economy. To add to this, the World Bank in its various reports (cited in Bahmani-Oskooee and Chakrabarti, 2005) has consistently maintained that private investment is the 'engine for growth and poverty reduction'. Therefore, any policy that affects domestic savings can also affect investment and thus growth. Thus, the examination of long-run equilibrium relationship or long-run cointegration between macroeconomic variables, growth, savings and investment is of paramount importance especially for an emerging economy like Nigeria which is striving toward higher and sustainable growth.

For Nigeria, such a long-run relationship with respect to gross domestic product has a special importance, considering that since independence, the country has attributed a greater

role of domestic savings and investment in promoting a sustainable level of economic growth.

Over time, Nigeria government has continued to manipulate these macroeconomic variables with the intent to push the frontier of economic growth and development, but unfortunately the growth rate has been unimpressive. This raises a research questions on what has been the reasons for such anomaly. Past empirical works on the relationship between macroeconomic variables economic growth, investment and savings especially in Nigeria appear to be one sided, in that they all focused on studying the impact of one economic variable on the other or the determinants of one of these three variables. Examples of these researchers are Nwachukwu and Festus (2007), Pahlavani (2006), Ogun and Obembe (2006), Olufemi (2008), Kriechnaus (2002), among others. These empirical works confirmed the likelihood of having a kind of diverse forms of relationship among the macro-economic indicators hence the need to critically examine these forms of relationship without restriction on the direction of causality. This will guide in formulating policy that will positively influence them and transform the influence to the overall economic development of the country, this is the basis for this research work.

## II. LITERATURE REVIEW

In the late 1970s and early 1980s, most developing countries of Africa (including Nigeria) experienced unprecedented and severe economic crisis. This crisis manifested in several ways such as persistent macroeconomic imbalance, widening savings-investment gap, high rates of domestic inflation, chronic balance of payment problems and huge budget deficit. Although different reasons have been adduced for the slowdown of these economies, some literatures attributed the problem to the decline in investment rates in the economies. Nigeria as a developing economy is faced with different economic problems which are directly linked with fluctuations in the major macro-economic variables (Odoko, 2003). The tendency of establishing or finding the correct relationship among the major macro-economic variables such as gross output (GDP), Gross Capital Formation, savings, exchange rate, inflationary rate, employment rate to mention a few and their right applications in policy implementation has been the secret of economic growth of many developed economy.

The debate on the key drivers of economic growth has been ongoing and it is still far from over (Nihat, Ali and Emrah, 2013; Mbulawa, 2015; Obrimah, 2015). Indeed, the role of macroeconomic stability through stable prices (low inflation), low levels of debt (whether foreign or domestic), free market economy, low levels of unemployment, is considered crucial in engendering sustainable economy (Mbulawa, 2015). The macroeconomic variables have manifested epileptic variations. The inflation levels in Nigeria moved down from 18% in 2005 to about 12% in 2012, 11.92% in 2014 and 8.5% in 2013 and 11.3 in 2019 e.t.c. However, interest rate in Nigeria which has the ability to impact on the level of investment and availability of credit in the country has averaged about 10.24% from 2010 to 2015 following a record

low of 6% in July 2009 (Trading Economics, 2016). The increase in interest rates attracted the inflow of foreign capital into the country. The sustained dependence on foreign capital over a long period of time has been associated as one of the major causes of a decline in the value of the local currency, the Naira. The import dependency on consumables, machinery and spare parts, led to increased level of inflation.

Savings, investment and economic growth have good relationship this is because availability of savings in every economy would boost investment and hence economic growth. The absence of adequate savings facilities has affected mobilization of domestic savings to investment in Nigeria. This has reduced the amount of loanable funds for investment. If investment is low, economic growth would also be low. Economic growth vividly put, means the quantitative growth in a country's gross domestic product. Using the simple open macro-economic model, the gross domestic product of a country is the addition to a nation's consumption, investment, government expenditure and net export. This shows that investment is very important in every economy. (Odey, Effiong and Nwafor, 2017). Olusoji, (2003) defines savings to be that part of income that is not spent on current consumption, but when directed to capital investment economic growth occurs rapidly. Capital formation through the mobilization of savings is a necessary factor in economic growth. As (Utemadu, 2002) rightly observed, countries that accumulate high level of capital always achieve rapid rates of economic growth. This implies that for a nation to finance larger investments for proper economic growth, sufficient savings must be generated or mobilized. This could be done either from borrowing abroad or proper capital accumulation.

The relationship between savings, investments and economic growth is noticeable since investment is a catalyst for industrialization and economic growth. Understanding this linkage; investment is made possible by another catalyst in savings. The synergy between investment and savings in Nigeria is not sustainable due to inadequate financial intermediation. This study will try to know whether or not the traditional view of growth that says that gross domestic savings and gross domestic investment promotes economic growth is valid? This is because the level of economic growth may itself affect the savings and investment rate. Barro (1991) and Romer (1990) stated that human capital investment and labour force also plays a special role in economic growth. Human capital investment and labour force are the key input which generates new ideas that leads to faster economic growth. Human capital investment is an important source of long-term economic growth (Mohamed, 2014). Understanding the impact of savings and investment on economic growth has become more relevant for policy implications in the Nigerian economy. Perhaps, if savings and investment causes economic growth, then promoting gross domestic savings and investment should be focused on to boost the level of economic growth in Nigeria. Meanwhile, most of the existing studies (Verma and Wilson 2005; Verma 2007; Ramesh 2011; Sultan and Haque 2011; Budha 2012; Mohamed 2014 and Turan and Olesia 2014) on savings, investment and economic growth are cross section and cross country studies and they do not use long period of data for analysis. The problem with such studies is the homogenous assumption across the

countries, which is unrealistic because of difference in culture, social, economic and institutional conditions. Therefore, country specific studies are needed to fill the gap by throwing more insight on the effect of savings and investment on economic growth in Nigeria because such studies are either scanty or do not exist in Nigeria.

Gocer, Akin and Alatas (2017) state that, domestic savings reinforces to higher investment and accordingly higher growth rate. Domestic savings is an essential resource for a developing country that is extremely sensitive to external shocks which affect economic growth and development. Going by the work of Gocer et al (2017), the common traits of developing countries are; the low per capital income and there with cannot finance their investments with national savings and unstable macro-economic indicators. The savings-investment Gap is one of the most important subjects in a developing country like Nigeria, in terms of reference to its macroeconomic indicators. A developing country like Nigeria need a close financing gap in investment and to close financing gap in investment, research and development and innovation with their domestic savings is required. Otherwise Nigeria will open its economy to foreign inflows to finance this gap because of unstable macroeconomic indicators.

Meanwhile, these inflows are usually short term and this is not enough to sustain stable economic growth.

On the other hand, short term foreign inflows and debt increase the external debt of developing countries, causing current account deficit, (Brits, Simis, Hondroyannis, Papazoglou, Tsanvas and Vasardam, 2012), Gocer, Mercan and Peker (2013); Bayraktar-Saglam and Yaita (2015). In this case countries are becoming more vulnerable against the exchange rate and foreign economic shocks (Ornek 2008; Gente, Leon-Ledesma and Noury, 2014; Ahmed and Zlate, 2014). Economic growth of less savings developing countries is strongly linked to quantitative easing policies in the United States and other high income countries.

## A. THEORETICAL REVIEW

Two savings, investment and growth theories namely; neoclassical theory of savings and investment and endogenous growth theory was used to explain the impact of saving and investment gap on economic growth in Nigeria.

### *a. NEOCLASSICAL THEORY OF SAVINGS AND INVESTMENT*

Neoclassical Economics is the name given to an economic theory that was developed at the end of the 19th and the beginning of the 20th Century in Europe. The main contributors to this theory were Léon Walras (1834-1910), Alfred Marshall (1842-1924) and Vilfredo Pareto (1848-1923). The issue that neoclassical economists dealt with was the distribution of power between industrialists and workers so as to ensure proper savings and investment. Neoclassical theory of savings and investment are today a matter of intense concern to millions of people around the world. The most basic questions people faces are: How much of their income should they save for the future? What risks should they insure against? How should they invest what they save? This theory

believed that since consumption is a function of disposable income, and savings is income not spent while investment is the income spent. This means that savings and investment are also a function of disposable income. This theory states that savings determine investment and is concerned primarily with market equilibrium and economic growth at full employment instead of with the under-employment of resources.

#### b. ENDOGENOUS GROWTH THEORY

This study will also be anchored on Endogenous theory propounded by Pagano (1993). The theory captures the potential effects of savings and investment on economic growth as a linear function of capital accumulation. The theory assumes that efficient financial sector might affect economic growth through three channels namely: reduction in transaction costs and channeling of increased savings to firms for productive investments, improving the allocation of capital and rate of savings. The two theoretical frameworks are very essential because they offer useful explanations on how savings and investment affects economic growth in Nigeria. Neoclassical theory of savings and investment theory explains how savings and investment determine the level of economic growth. The endogenous growth theory offers useful link through which accumulated savings are channeled to productive investments (through lending activities) for economic growth.

#### c. NEO-CLASSICAL AND ENDOGENOUS GROWTH THEORIES

Mundell (1963) & Tobin (1965), have explained the effect of inflation on economic growth based on neo-classical growth theory. They depict a positive relationship between inflation and economic growth by assuming that real money balance and investment are substitute. Thus when inflation is high, it will decrease the return on real money balances but the return on investment will increase and people substitute real money balance by investing on other assets. This increases capital accumulation and the economic growth and it will show positive relationship between inflation and economic growth. Contrary to the conclusion of the undell-Tobin effect, Stockman (1981) develops a long-run equilibrium growth model with assumption of "cash-in-advance constraint. In the model of Stockman (1981), the two variables relationship is complement, accounting for a negative relationship between the steady-state level of output and the inflation rate. Stockman models this cash investment as a cash-in-advance restriction on both consumption and capital purchases. Since inflation erodes the purchasing power of money balances, people reduce their purchases of both cash goods and capital when the inflation rate rises. Correspondingly, the steady-state level of output falls in response to an increase in the inflation rate. Also return to labor falls when the inflation rate rises. As such, people substitute away from consumption to leisure, because the return on labor falls and this in turn reduce economic growth

#### B. EMPIRICAL REVIEW

Odey, Effiong and Nwafor (2017) analysed the impact of savings and investment on economic growth of Nigeria. The study adopted econometric techniques to empirically test the relationship between savings, investment and economic growth. Stationarity test, cointegration and error correction model was used to estimate the nature of relationship between savings, investment and economic growth. The results found that factors such as Gross Domestic savings, Gross fixed capital formation, labour force and savings facility are the main drivers of economic growth in Nigeria. This means that if there was proper capital accumulation in the form of savings, investment would be great and sustainable.

Ojiegbe, Duruechi and Makwe (2016), investigated the effect of savings and investment on the economic growth of Nigeria. To achieve the objectives of the study, secondary data were obtained from the Central Bank of Nigeria statistical bulletin providing record of Nigerian saving, investment and Gross Domestic Product (GDP) over the period 1980-2014. The data gathered were analyzed using the ordinary least square method of analysis, the augmented Dickey Fuller Test, Granger Causality Test, Error Correction Model and the co-integration test were equally carried out to check the stationarity and the causal direction of the variables and also to check the long run relationship between the variables of study. The result of the statistical analysis revealed that there is a long relationship between saving, investment and economic growth in Nigeria.

Mohamed (2014) examined the causal relationship among savings, investment and economic growth in Ethiopia using annual time series data from 1970-2011 in a multivariate framework. Result from the ARDL Bounds Testing indicates that there exists co-integration among savings, investment and gross domestic product when GDP is taken as dependent variable. The study also revealed that labor force and investment have significant positive effect on economic growth of Ethiopia both in the short-run and in the long-run while savings and human capital are statistically insignificant.

Nwanne (2014) examined the implications of savings and investment on economic growth in Nigeria. Results for ADF and PP unit root tests show that all variables under consideration are I (1). The study also revealed that there is long run relationship between savings, investment and economic growth in Nigeria. The result of the regression indicates that change in gross domestic savings movements has negative and significant effect on the change in economic growth in Nigeria and that the change in gross domestic investment has positive and significant effect on the change in the Nigerian economic growth.

Budha (2012) employed the Autoregressive Distributed Lag (ARDL) approach to test for Cointegration, error correction and granger causality analysis in examining the relationship between the gross domestic savings, investment and growth in Nepal for the period of 1975 to 2010. The results of the study showed that co-integration exists between gross domestic savings, investment and gross domestic product when each of them is taken as dependent variable. The result of the granger causality test revealed that there is short-run and long-run bidirectional causality between investment

and gross domestic product as well as between gross domestic savings and investment. Nevertheless, no short-run causality is found between gross domestic savings and gross domestic product.

Ramesh (2011) used granger causality test, Johansen co-integration test and vector error correction model to examine the direction of relationship between saving, investment and economic growth in India at both aggregate level and sectoral level for the period 1951 to 2008. The co-integration test result suggests that there exist co-integration relationship among all series with GDP except private corporate savings. The study also found that the direction of causality runs from savings and investment to economic growth collectively as well as individually and there is no causality from economic growth to savings and (or) investment.

Agbarakwe (2017) examined the impact of key macroeconomic variables on Nigeria's economic growth for the period 1980 to 2016. The selected macroeconomic variables are inflation rate (INF), Unemployment rate (UM) and interest rate (INT). The study is an attempt to evaluate how these key macroeconomic variables explain the growth of Nigerian economy. The scientific method adopted for this investigation is multiple regression analysis. However, the study carried out some diagnostic tests which include unit root test, cointegration analysis, vector error correction model (VECM) and granger causality test. The vector error correction model was employed to estimate both the short run and long run relationship between the regressor and the regressand. The result obtained indicate that there is a long run significant but negative relationship between gross domestic product and inflation. The study further reveal that the speed of adjustment from short run to long run is slow, specifically, it takes about 41 percent speed to adjust from previous year to a current year. The result equally show that there was bi-directional causality between gross domestic product and inflation but a uni-directional causality flows from GDP to interest rate. This therefore, implies that a good performance of the Nigerian economy in terms of growth may be achieved with low rate of unemployment and interest rate in the country, hence a major policy implication is that concerted effort should be made to reduce unemployment and stabilize the prices of goods and services (inflation) so as to achieve high, rapid and sustained economic growth rate in Nigeria.

Yelwa, M. (2015), investigated the relationship between unemployment, inflation and economic growth in Nigeria. Utilizing secondary data with OLS regression method, their results confirmed that interest rate and total public expenditure bares significant impact on economic growth in the long run whereas on the contrary, inflation and unemployment has inverse effects on growth in the Nigerian economy. They clarify further that this increase is likely due to interruptions in the supply chain of goods both from the domestic and foreign supply outlets other than the suspected aggregate demand pressure. The study concludes with a confirmative note on the existence of a causal linkage between inflation, unemployment and economic growth in the Nigeria n economy recommending among others the need for government to improve the macroeconomic policy instruments to the attainment of sustainable and enabling environment in order to propel domestic output,

Saymeh & Orabi (2013), observed the influence rate of interest, inflation rate and GDP on real economic growth in Jordan for the period from 2000 to 2010 using financial econometrics. Johansen cointegration test results confirmed that all the variables were associated in the long-run. Moreover, regression test results illustrated that interest rate and inflation rates had a shock on economic growth rate.

Ekpo (2014) examined the nexus of macroeconomic policy (monetary and fiscal policies), investment and economic growth. The findings established that monetary and fiscal policies affect aggregate investment and economic growth in Nigeria. It also showed that the management of monetary and fiscal policies in Nigeria has not yet achieved macroeconomic stability objective. The implementation of the monetary policy, in particular, has not helped to stimulate savings and ensure it's efficient allocation for investment purposes, hence appropriate rate of investment and sustained economic growth has eluded the country. For a sustainable macroeconomic policy that will engender appropriate rate of investment and sustained economic growth, this paper therefore, recommends harmonious working relationship between monetary and fiscal authorities, effective coordination and harmonization of monetary and fiscal policies, monetary policies should focus on lowering interest rates and increasing availability of credits to productive sectors of the economy. Furthermore, the monetary authorities should strongly discourage exploitative tendencies and unethical practices of banks, banks should avoid sharp and unscrupulous practices and discipline themselves to play according to the rules of the game as well as effectively carry out their financial intermediation role.

Akinola and Omolade.(2013) investigated the relationship among savings, gross capital formation and economic growth in the Nigeria economy, between 1975 and 2008. The study adopted co-integration and vector error correction model VECM as the estimating technique with special reference to VAR causality test. The result of unit root i.e. stationary test showed that the gross domestic product GDP which is a proxy for growth, savings which is a proxy for gross national savings GNS are both integrated of order two i.e. 1 (2) while capital formation which gross capital formation GCF served as its proxy is integrated of order 1 (1) The findings revealed the existence of long run relationship among the three variables as shown from the co-integration regressions which were characterized by high R square, positive coefficient from all parameter estimates and significant of F values from all the three equations. The vector error correction model, apart from corroborating the strong linkage among the three variables, also showed that GDP has stronger influence on both GNS and GCF than the influence of GNS and GCF have on GDP .Also causality test confirmed the existence of the symbiotic relationship among them since GDP and GCF, GDP and GNS, and GNS and GCF all exhibit bidirectional causality. If the findings of this research work are transformed into policy implementation i.e. proper harmonization of policies on economic variables, development of the real sector of economy, acceleration of the growth of capital formation, grass root mobilization of savings from the surplus sector to deficit sector, it will lead to a sustained long run economic growth.

### III. METHODOLOGY

This study is focused on investigating the relationship between savings, investment gap and economic growth in Nigeria for the period between 1981-2016. Thus, the study adopted econometric techniques to empirically test this relationship. Stationarity test, co-integration and an error correction model were estimated in order to determine the nature of relationship between savings, investment and economic growth in Nigeria; Augmented Diskney Fuller, Autoregressive Distributed Lag was employed as an estimation technique. These contemporary econometric techniques allowed the researchers to determine the levels of integration of each of the variables and also capture the long run relationship and speed of adjustment. This is in line with the study carried out by Odey, Effiong and Nwafor (2017). They used GDP to capture economic growth, interest rate, inflation rate, labour force, gross capital formation, savings facility, Gross Domestic savings were the variables used in the study. Therefore the variables have being adapted with an adjustment on the model and variables used.

#### A. MODEL SPECIFICATION

The model for this work is an eclectic one in view of the fact that, one particular theory cannot explain the relationship between savings, investment and economic growth. This model combined the savings-investment theory and the endogenous growth model. The model is specified as followed:

$$RGDP = a_0 + a_1INTR + a_2INFL + a_3\Delta SIGN + a_4GFCF + a_5GDS + U_t - (1)$$

The a priori expectation for equation (1) is:  $a_1, a_2 < 0$  and  $a_3, a_4, a_5 > 0$

Equation 1 above is an attempt to show how savings and investment impact on economic growth in Nigeria. Economically the equation is written including the stochastic error term with white noise.

INTR = Interest rate

INFL = Inflation rate

$\Delta SIGN = \Delta$  Saving-Investment in Nigeria

GFCF = Gross fixed capital formation (Proxy for investment)

GDS = Gross domestic savings

$U_t$  = stochastic variables

### IV. DISCUSSION OF FINDINGS

The first step of the analysis is to test for the unit root test. In order to achieve this, the standard Augmented Dickey-Fuller (ADF) unit root test was used to check the order of integration of the variables. The results obtained are reported in Table 1 below. Based on the ADF test statistic, it was observed that there is mixture in the results, as there are variables that became stationary at level I(0) and some at first difference I(1). Therefore, the null hypothesis which says there is presence of unit root is rejected and the alternate is accepted, which indicates that, variables have no unit root. The rejection of the null hypothesis is based on MacKinnon

(1996) critical values. The lag length are selected based on SIC criteria, this ranges from lag zero to lag three

Variable	ADF Statistic	Critical value	DW	Lag	Inference
LGDP	-5.5508	-2.9511	1.99	3	I(1)
LGDFC	-4.4910	-2.9402	1.91	3	I(1)
LGDS	-8.4852	-2.9511	2.16	3	I(1)
LSIGN	-7.3587	-2.9810	1.89	3	I(1)
INT	-6.6005	-2.9540	1.85	3	I(1)
INF	-3.4020	-2.9511	1.77	3	I(0)

Source: Author Computation from Eviews 9

Table 1: Results of Augmented Dickey Fuller (ADF) Stationary Test

#### A. CO-INTEGRATION TEST USING ARDL BOUND TESTING

To ascertain combine movement of the savings and investment gap and economic growth in the long run, the study employed ARDL Bound Testing. The main assumption of ARDL is that included variables in the model are having co-integrating order of  $I(0)$  or  $I(1)$  or both. This lends support for the implementation of bound testing. The results of bounds testing approach for long run relationship show that the ADF values of the variables are greater than the test critical values for lower bound test and lower than the upper bound test, implying that the null hypothesis of no co-integration cannot be accepted. In effect, there is indeed a co-integration relationship among the variables at 5% level of significance.

ARDL Bounds Test

Date: 06/20/18 Time: 15:14

Sample: 1982 2016

Included observations: 35

Null Hypothesis: No long-run relationships exist

Test Statistic	Value	K
F-statistic	3.283360	5
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.26	3.35
5%	2.62	3.79
2.5%	2.96	4.18
1%	3.41	4.68

Table 2: Ardl Bound Testing For Co-Integration

#### B. ESTIMATION RESULTS

The estimation of the series was done through the use of ARDL. From the result, it was revealed that log GDP at lag one has positive coefficient (0.833) and it is significant (0.000) at 5%. In the same vein, LGDFC, LGDS, SIGN and INT at lag 1 have negative impacts on economic growth and they are not statistically significant while INF rate at lag 1 has positive impact on economic growth but not statistically significant. The implication of these is that, one increase or decrease/increase in LGDFC, LGDS, SIGN and INT will have a



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