

## What Explains Economic Growth in Nigeria in the Last Three Decades? – A Dynamic Modelling Approach

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**Abstract:** This paper tries to find out the factors that explained economic growth in Nigeria in the last three decades. It explores how variables such as foreign direct investment, physical capital, export, saving, natural resources, financial development, population, government size, and foreign exchange influence economic growth in Nigeria. It uses data from 1989 to 2019 and the dynamic econometrics modelling techniques of autoregressive distributed lag (ARDL) and generalized method of moments (GMM) models to analyze the data. The findings show that physical capital, agriculture, saving, population growth and government size have positive effects on economic growth in Nigeria during the study period. The paper recommends increase in physical capital build up through various types of infrastructural investments, more development of the abundant potentials in the agricultural sector and increase in national saving through government encouragements and favorable policies. These shall be anchored by good macroeconomic management of the nation's economy.

**Keywords:** Economic growth, Development economics, Nigerian economy, ARDL, GMM, Macroeconomic variables.

**JEL:** O4, O1, E1, Q1.

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## 1. INTRODUCTION

Since the beginning of the industrial age, the topic of long run economic dynamics has remained the main concern of economists around the world. Countries from Africa to Europe, Asia to the Americas have pondered over the question of how to achieve steady economic growth over time. This has become the recurring theme in conferences, academic forum and meeting of professionals working with global and regional development organisations. In the case of Nigeria, recently economic growth has remained volatile over the past one decade (Abdullahi, and Mukhtar, 2020). Growth has been characterized by convoluting up and down including periods of recessions described as two consecutive quarters of negative economic growth in 2016 and 2020. According to Lindholm (1967), economic growth refers to the annual increases in the goods and services available in a nation. But, to Dwivedi, (2004), economic growth is measured as a percentage change in the Gross Domestic Product (GDP) or Gross National Product (GNP). But, economic development according to Adelman (1961) is

the kind of change arising from within the system which so displaces its equilibrium point that the new one cannot be reached from the old one by infinitesimal steps. Scholars such as Lucas (1988); Mankiw, Romer, and Weil (1992) and Islam (1995) have emphasized the role human capital development plays in economic growth. Landau (1986) and Barro (1996) have observed negative relationship between large government size and economic growth and that larger government size (share of government consumption in GDP) weakens economic growth. According to Ajide (2014), it is acknowledged among economic growth analysts that a country that enjoys more economic freedom attracts more FDI inflows and growth faster than country that is not enjoying the same freedom. Models such as the endogenous growth model have occupied themselves with the role of technological advances and innovation in economic growth.

Nigerian GDP is recently put at 432.29 billion US dollars in 2020 making it the largest economy in Africa. According to CIA World Fact Book, Nigeria is

endowed with different types of natural resources such as natural gas, petroleum, tin, iron ore, coal, limestone, niobium, lead, zinc, arable land, and different other types of manmade resources. It has population of over 200 million people according to recent figures from Nigerian population commission. In the recent years, Nigeria has used different type of economic formulas aim at finding solutions to economic problems bedeviling it. These policies include the use of monetary and fiscal policies, export promotion strategy, imports substitution strategy, privatization of government enterprises together with liberalization, National economic empowerment and development strategy (NEEDS) policy package, Visions 2010 and 2020 and the recent austerity measures blend with import substitutions policies (Abdullahi, 2018). Recently, President Buhari has committed billions of Dollars in infrastructural investment in areas such as rail line, new roads, dams, power station, airports, seaports, river ports and gas infrastructures. These investments must surely increase the stock of capital in the economy. But, at the same time ordinary people do not care much about the amount of capital in the economy or even the amount of output. But what they care more about is the amount of goods and services they can consume (Mukhtar and Abdullahi, 2020). Hence, the habitual question of how much is the price of goods and services. But, capital investment is a long term project whose benefits come only later. This is the kind of dilemma policy makers, especially in democracies where there is periodic elections, faced. Questions such as, ‘how much capital goods to provide without affecting very much the amount of consumer goods needed in the short run?’ are frequently asked. Those policy makers that look at the bigger picture, the long run, will provide more capital goods; while those that look at the shorter view, the immediate needs, and thinking of the next coming election will provide mostly consumer goods.

The example of the so-called Asian Tigers has been a reference point when it comes to demonstrating how poor countries become rich. High levels of domestic financial savings have sustained the high performing Asian economies’ (HPAEs) high level of investment. Agriculture has experienced rapid growth and productivity improvement. Population growth rate has also declined. The presence of highly educated workforce and effective system of public administration has helped these countries a lot (The World Bank, 1993). Some scholars of economic growth and development have argued that the successful Asian economies have been better than others in providing a stable macroeconomic environment and a reliable legal framework to promote domestic and international competition. The HPAEs used an immense variety of policies to achieve three critical functions of growth, accumulation, allocation and productivity growth (The World Bank, 1993). The various types of economic growth theories and models we have, highlighted the different ways in which present economic activity can

influence future economic developments and can also be able to identify sources that may lead to continue economic growth (Boldeanu and Constantinescu, 2015). Private domestic investment and rapidly growing human capital were the principal engines of growth in the case of East Asia countries success story (World Bank, 1993).

This paper tries to find out what determines economic growth in Nigeria by answering the question, What is the role of variables such as foreign direct investment, physical capital, export, saving, natural resources, financial development, fiscal prudence, population, government size and foreign exchange on economic growth in Nigeria? The aim of the study, therefore, is to empirically isolate factors responsible for economic growth in Nigeria using study variables supported by economic theories, empirical studies and peculiarities of Nigerian economy. Hence, the paper tries to find out short run and long run dynamism in the Nigerian economy as it relate to the phenomenon of economic growth. This research work adds to the existing literature on determinants of economic growth in Nigeria from a number of angles that include new variables, most recent data and choice of econometric model. The paper is divided into introduction, literature review, theoretical framework, methodology and conclusion and recommendations sections.

## 2. LITERATURE REVIEW

The extant literature in economics has established various relationships between economic growth and other macroeconomic indicators. Economic growth itself is a strong economic indicator that easily defines how healthier a particular economy is, or otherwise, by looking at the overtime “trend rate of growth”. The study of these major economic and non-economic determinants, in relation to economic growth, was analyzed in various empirical studies. Tartiyus, Dauda and Peter (2015) studied the impact of population growth on economic growth in Nigeria. Descriptive statistics and regression analysis were applied in the analysis that covered the period of 1980-2010. They discovered that, a positive relationship exists between economic growth and population growth, fertility and export growth. While negative relationship exists between economic growth and life expectancy and crude death rate. The impact of international trade on the economic growth in Nigeria was studied by Agbo and colleagues using the multiple regression analysis technique, covering the time frame 1980-2012 (Agbo, Agu and Eze, 2018). The result revealed the existence of a significant impact of export trade on the Nigerian economic growth.

In an analysis of relationship between manufacturing subsector and economic growth in Nigeria, Oburota and Ifere (2017) have conducted study using time series data of 1981-2013. The result of the analysis disclosed that, the major determinants of economic growth in Nigeria were manufacturing

output, capital and technology. It also reaffirmed that labor force and quality of institution did not have any impact on economic growth. With regard to financial inclusion's relationship with economic growth in Nigeria, Babajide and colleagues, using ordinary least square regression model, investigated the impact of financial inclusion on economic growth in Nigeria (Babajide, Adegboye and Omankhanlen, 2015). They discovered that financial inclusion stood to be the significant determinant of factors of production and capital per worker, which on the other hand determines the final level of output in the Nigeria economy. Olajide, et al, (2015), using ordinary least square regression method within a time frame of 1970-2010, studied the relationship between agricultural resource and economic growth in Nigeria. They discovered an existence of a positive cause and effect relationship between the variables they studied. A study by Adelakun (2011) analysed the relationship between Human Capital Development and Economic Growth in Nigeria by employing ordinary least square model. He discovered that a strong positive relationship exists between these two variables.

In the academic literature, human capital development refers to the procedure of acquiring and nurturing a required number of people who have the ability, education and acquaintance which are critical for the economic and political development of a nation. Human capital development is therefore related to investment in man and his development as a valuable, creative and productive resource (Jhingan 2013). Human capital development can also be seen to mean developing skills, knowledge, productivity and inventiveness of people through process of human capital formation. It is people centered strategy of development which is widely referred to as agent of national development and rejuvenation in countries around the world. Human capital formation refers to the procedure of acquiring and accumulating the required number of people who have the skills, good health, education and experience that are critical for economic development (Fadila and Olure-Bank 2019). Population growth has been one of the major dilemmas of economic growth and development in poor countries. Demographers and economists such as Thomas Malthus have occupied their minds with the problem of population growth vis-à-vis economic development. Neoclassical economists have merely seen the problem of economic development as that of economic growth. But, economic growth and development have been the focus of the work of quite a number of economists; prominent among them are Adam Smith, David Ricardo, Karl Marx, John S. Mills, Joseph Schumpeter, W.W. Rostow, Harrod, Domar, Solow, Roma and many others after them.

It is important to measure the extent to which government is ensuring human capital development in Nigeria. Although there are many ways to assess the development, however, only a few important ones that

are readily measurable shall be considered in project aims at accessing the impact of human capital on growth. These include Poverty reduction and empowerment of Nigerians in rural and urban areas to be economically productive. Under the poverty reduction program, governments at federal, state and local government levels must ensure that the strategy to be employed will empower Nigerians both in rural and urban areas to be economically productive with the aim of improving their quality of life. To avoid the mistakes of the past, projects and measures to be implemented shall always be people oriented. The people that are concerned as stakeholders take ownership of the move towards significant improvement in the supply of quality drinking water, basic educational facilities, (under the universal basic education scheme and the mass adult literacy program) and basic health facilities, to be embarked upon nationwide (Adelakun, 2011). The literature on the role of human capital on economic growth in Nigeria mostly sees the issue as that of improving the quality of lives of average Nigerians.

On the other hand, Foreign Direct Investment (FDI) is seen as having the capacity to augment the domestic available supplies of human and financial resource needed to achieve growth and development targets. Increase in and better utilization of both human and maternal resources and reduction in unemployment are important elements of economic growth and development strategy. Providing needed capital for investment, enhancing job creation mechanism and advanced managerial skills as well as transfer of technology are growth enhancing. The raving desire to achieve economic growth and development, apart from being the pillars for launching the New Partnership for Africa's Development (NEPAD), has led many countries to improve their business climate to attract more foreign investment (Otoighile et al, 2018). Foreign direct investment (FDI) have positive impact on economic growth of a swarm of countries through frequent though and unintentional channels. It supplements domestic investment which is necessary for the attainment of growth and development. Nigerian government has been desperate to boost the country's growth potentials and take it out of the economic disaster that deprived it of achieving anticipated economic success (Olokoyo, 2012). Governments have dedicated the much needed attention to attract investment mostly in the form of foreign direct investment which will not only assured employment and increase government revenue but will likewise impact positively on economic growth and development. FDI is needed to decrease the difference between the anticipated gross domestic investment and domestic savings (Eravwoke and Eshanake, 2012).

Schumpeter (1949) argued that economic development is synonyms with discontinuous technical change. For Schumpeter (1949), the rate of capital accumulation is closely related to the rate of technological change, and rises and falls with it.

Therefore, growth, and especially saving, owes its actual quantitative importance to another factor of change. For Schumpeter, population growth is determined exogenously. He argued that there does not exist a unique a priori relationship between changes in population and variations in the flow of goods and services. For Schumpeter, the rate of growth of output in an economy depends on rate of population growth and technical progress. This explains the frequent reference to capital and population growth as determinants of economic growth. Harrod and Domar models tried to explain economic growth in terms of level of saving and productivity of capital in an economy (Adelman, 1961). Their theories demonstrated that growth rate of GDP in an economy is determined by net national savings and national capital-output. Hence, the more an economy saves and invest, the greater the growth of GDP and the change in national capital-output ratio will bring the same proportional change in GDP. According to Lindholm (1967), economic development means that the nation's annual economic growth is greater than would be needed to maintain the existing standard of living for a raising population. In order to achieve economic development, the GNP must increase at a faster rate than the rate of population increase.

Akinkunmi (2017) has empirically analysed performance of economic growth in Nigeria since independence in 1960. He investigates the major determinants of economic growth for the sample period 1960-2015. The findings of the study based on Autoregressive Distributed Lag (ARDL) model indicate that in the long-run economic growth is significantly influenced by level of investment. Esu and Udonwa (2016) have assessed the role of growth determinants in economic growth of the Nigerian economy from 1981 to 2013. They employed Augmented Cobb-Dougllass Production Function (gleaning from Solow Growth Model) and an error correction modelling framework for the analysis of the data. The results showed that population growth fostered economic growth in Nigeria. They further underlined the fact that the benefits of this would depend on the quality of the population. Ajide (2014) has investigated role of Frazer Economic Freedom Index on FDI-growth relationship over the period 1980 to 2010. The results show that labour, life expectancy, degree of openness and economic freedom are factors affecting economic growth. Estimates also show that size of government negatively effects economic growth while freedom to trade internationally has positive effects. Tartiyus, Dauda and Peter (2015) evaluated the impact of population growth on economic growth in Nigeria between the period of 1980-2010. The result of the analysis showed that there is positive relationship between economic growth and population. Onwuka (2006) tests the relationship between population growth and economic development in Nigeria between 1980 and 2003. He found that population growth outweighs the growth in output. He concluded that this has

hindered the capacity of past Nigerian governments to efficiently provide social services, thus negatively affecting development.

Udeaja and Onyebuchi (2015) have also investigated the determinants of economic growth in Nigeria. The duo adopted Johansen cointegration technique and the vector error correction methodology for the analysis. The results suggested long run relationship between economic growth and domestic savings, expenditures on education and health, openness to trade, FDI, public infrastructure, and financial deepening. Nyoni and Bonga (2018) have explored the determinants of economic growth in Nigeria. The results of the analysis show that the main determinants of economic growth in Nigeria are the following: population growth, inflation, foreign direct investment (FDI), interest rates, exports and private & public investment. Egbulonu and Ajudua (2017) examined the determinants of economic growth in Nigeria using data for the period 1980 to 2014. The study showed that relationship exists between economic growth as dependent variable and foreign direct investment, degree of openness, gross capital formation, money supply, government expenditure and labour force who served as independent variable. These variables were found to have positive and direct relationship with economic growth while interest rate was found to have negative relationship with economic growth. Ismaila and Imoughele (2015) examined the macroeconomics determinants of economic growth in Nigeria using real gross domestic product (RGDP). They used Johansen's co-integration test to establish short and long run relationships between economic growth and major macroeconomics determinants. The results showed that gross fixed capital formation, foreign direct investment and total government expenditure are main determinants of Nigeria economic growth. Akiri and Vehe and Ijuo (2016) investigate the impact of foreign direct investment on economic growth in Nigerian during the period, 1981-2014. The study captured foreign direct investment (FDI), government capital expenditure (GCE), exchange rate (EXR) and interest rate (IR). The result showed that FDI has positive effects on economic growth. Adeleke, Olowe and Fasesin (2014) have analyzed the effect of foreign direct investment on Nigeria economic growth during the period of 1999- 2013. The paper found FDI to be directly related to economic growth in Nigeria by affecting it positively.

### 3. THEORETICAL FRAMEWORK

In the modern work on economic growth, the usual starting point is Robert Solow works on economic growth. Solow (1956) growth model falls within the neoclassical growth framework. The basic assumptions of the Solow model are the following: constant returns to scale, diminishing marginal productivity of capital, exogenously determined technical progress and substitutability between capital and labour. Solow model has emphasized the role of saving as major

determinant of capital stock. In the model higher saving leads to faster economic growth, but only temporarily. The model emphasized that capital accumulation on its own cannot guaranteed sustained economic growth and that high rate of saving lead to high growth in the short run. But, the economy gradually reach the level of steady state where capital and output are constant (Mankiw, 2007). Hence, the different types of expansion of the model to include other factors such as population growth and technological progress. According to Mankiw (2007), Solow model was developed to show the way growth in the capital stock as well as growth in labour supply and technological advances interact in an economy; and how they affect a country's overall output of goods and services. Hence, capital stock determines economic output and with it welfare and economic progress. But, since capital stock can change overtime, these changes can lead to economic growth.

Tsauni (2005) in paper on the determinants of capital formation in Nigeria found that commercial bank loan and advances, capital expenditure on economic services and overall deficit are capital augmenting, while gross consumption expenditure, gross national saving and external debt burden are capital retarding. According to Solow only technological progress can explain sustained economic growth and higher living stand (Mankiw, 2007). Higher capital stock shall be expected to bring about higher output and investment. The supply of goods in the Solow model is based on the production function, which state that output depends on the capital stock and labour. Solow growth model is of the form:  
 $Y = f(K, L, T) \dots\dots\dots (1)$

Where Y represent output, K is capital stock, L represent labour and T represent technology. The origin of this type of model began with a simple production function where the factors of production in the economy determine the level of economic output. The Cobb-Douglas form of the simple production model is as follows:  
 $Y = AL^\alpha K^\beta \dots\dots\dots (2)$

Where A is the parameter that captures the effects of other factors affecting production; these other factor are numerous. Works such as that of Lucas (1988); Lipsey and Chrystal (2004), Antwi, Mill and Zhao (2013); Ajide (2014); Boldeanu and Constantinescu (2015); Nyoni and Bonga (2018) have listed some of the variables affecting economic growth to include FDI, inflation, physical capital, existence of human capital resources, interest rate, export growth, national saving, absorptive capacity of the host country, natural resources, efficiency of the financial system,

fiscal prudence, good trade policies, size of the market, size of the government, technological progress and foreign exchange management. Research after research has shown that output in an economy is affected by vector of many other variables that are not restricted to the ones the simplified Solow model has referred to. Because of this our augmented model will be of the form:  
 $Y = f(FDI, CAP, XPT, SAV, AGR, FD, BAL, POP, GOV, FOR) \dots\dots\dots (3)$

Where, Y = GDP denotes economic growth, FDI means foreign direct investment, CAP means physical capital, XPT means export, SAV is saving, AGR means agricultural resources (in term of number of hectares in use), FD is financial development, BAL = FIS denotes balance of payment, POP means population, GOV is government size (in term of government consumption expenditure) and FOR means foreign exchange.

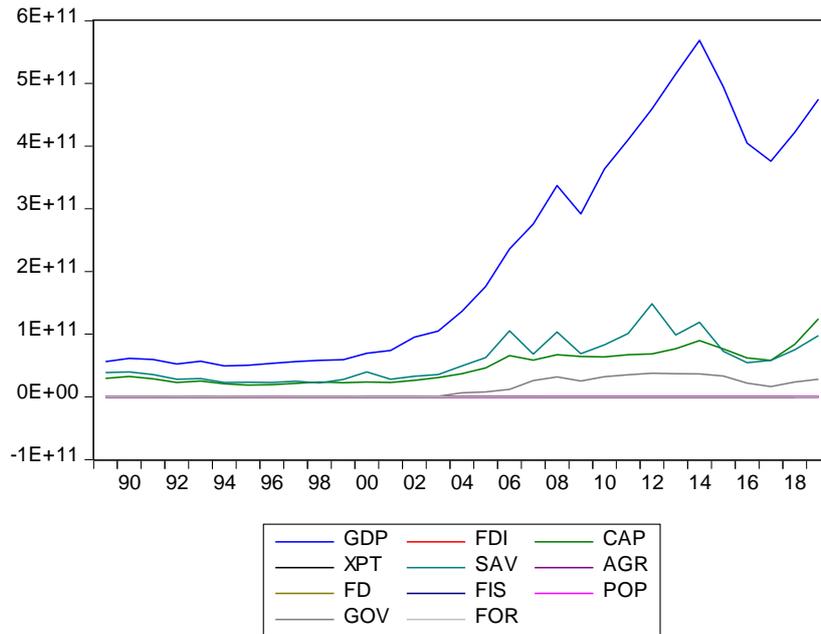
## 4. METHODOLOGY

### 4.1 Data

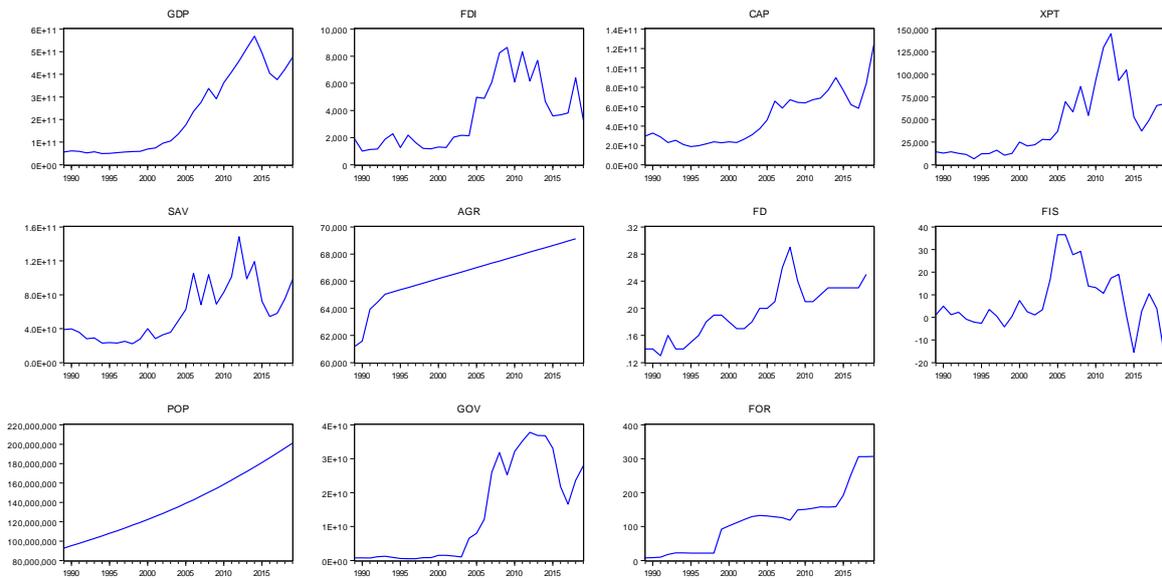
A number of empirical studies conducted to identify determinants of economic growth have resorted to using as many determinants as possible (Sala-i-Martin, Doppelhofer, and Miller 2004; Ciccone and Jarocinski 2010). They argued that the robustness of determinants of economic growth can only be guaranteed by adding many class of determinants of growth. Because of this, this paper also uses as many relevant variables to explain economic growth in Nigeria as possible. The data used for the study is time series data for the period 1985 – 2020 obtained from Central Bank of Nigeria (CBN) statistical bulletin, The National Bureau of Statistic (NBS) and the World Bank.

### 4.2 Stylized Facts about economic growth and its determinants in Nigeria

Figure 1 and 2 show graphical representations of the variables in the study. They show that all the variables except population and agriculture area are volatile in the later years. Physical capital investment has increased exponentially between 2015 and 2019 indicating the infrastructural investments of government and other physical capital built up; saving has also increased during the same period. Foreign exchange has continued to go up throughout the period of the study. The deterioration in the balance of payment during the later period may be due to decline in government revenue and mounting government debts. Economic growth (GDP) has also continued to rise despite few setbacks.



**Figure 1: Single graph of the study variables**  
Source: authors' calculation using Eview



**Figure 2: Graphs of individual variables**  
Source: authors' calculation using Eview

**Table 1: Correlation between variables**

	GDP	FDI	CAP	XPT	SAV	AGR	FD	BAL	POP	GOV	FOR
GDP	1	0.7754	0.9631	0.8517	0.8507	0.7809	0.7880	0.2410	0.9215	0.9564	0.7718
FDI	0.7754	1	0.8270	0.8281	0.8024	0.6439	0.7945	0.5848	0.7012	0.8645	0.5666
CAP	0.9631	0.8270	1	0.8365	0.8775	0.7227	0.8148	0.3669	0.8827	0.9310	0.7498
XPT	0.8517	0.8281	0.8365	1	0.9563	0.6413	0.6759	0.4427	0.7162	0.9124	0.5488
SAV	0.8507	0.8024	0.8775	0.9563	1	0.5948	0.6957	0.5318	0.7001	0.8877	0.5388
AGR	0.7809	0.6439	0.7227	0.6413	0.5948	1	0.8079	0.2696	0.9089	0.7192	0.8474
FD	0.7880	0.7945	0.8148	0.6759	0.6957	0.8079	1	0.4835	0.8367	0.8022	0.7480
BAL	0.2410	0.5848	0.3669	0.4427	0.5318	0.2696	0.4835	1	0.2363	0.3237	0.2332
POP	0.9215	0.7012	0.8827	0.7162	0.7001	0.9089	0.8367	0.2363	1	0.8277	0.9447
GOV	0.9564	0.8645	0.9310	0.9124	0.8877	0.7192	0.8022	0.3237	0.8277	1	0.6409
FOR	0.7718	0.5666	0.7498	0.5488	0.5388	0.8474	0.7480	0.2332	0.9447	0.6409	1

Source: authors' calculation using Eview

Table 1 shows correlations between variables in the study. It shows that economic growth (GDP) has very high correlations with physical capital (CAP), population growth (POP) and size of government (GOV). It has least correlations with balance of payment (BAL).

#### 4.3 Empirical model

All the variables here are expressed in natural logarithmic forms. This is because apart from helping to produce a better result as compared to linear functional form, natural logarithmic forms also helps to reduce problem of heteroscedasticity. It is in the form:

$$\ln Y = \alpha + \ln FDI + \ln CAP + \ln EXP + \ln SAV + \ln NAT + \ln FD + \ln POP + \ln GOV + \ln FOR + \mu \dots (4)$$

#### 4.4 Unit Root Tests

We used the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests to determine the order of integration of the series. The reason for this is to check if the series are stationary. Determination of whether a variable possess a unit root or not is to find out if the variable shows characteristics such as mean reversion and finite variance, transitory shocks with autocorrelations dying out due to increase in number of lags under alternative hypothesis of stationarity.

#### 4.5 ARDL model

ARDL model is applicable to both non-stationary time series and times series with mixed order of integration. The popularity ARDL comes from the fact that cointegration of nonstationary series is equivalent to an error correction (EC) process and that the ARDL model has a reparameterization in EC form (Hassler and Wolters, 2006). The model uses sufficient numbers of lags to capture the data generating process in a general-to specific modeling arrangement. In case of a single long run relationship, the ARDL method can differentiate between dependent and explanatory variables. Generally, cointegration test helps us in knowing whether the underlying variables in a model are cointegrated or not, given the endogenous variable. The bounds testing procedure draws conclusive inference without knowing whether the variables are integrated of order zero or one [I(0) or I(1)] (Pesaran, Shin, and Smith, 2001).

Usually, the F-test test for significance of the lagged levels of the variables is conducted. The null hypothesis of none existence of cointegration  $H_0: k_1 = k_2 = k_i = 0$  is tested against the alternative hypothesis of at least one non-zero outcome,  $H_1: k_1 \neq 0$  or  $k_2 \neq 0$  or  $k_i \neq 0$ . The calculated F-statistics is compared with the critical values; where the F-statistic is greater than the upper bound level; the null hypothesis is rejected, which proves the existence of co-integration. But, in case where the F-statistic falls below the lower bound, the null hypothesis cannot be rejected, indicating the absence of co-integration. But, it is termed as inconclusive if it falls within the upper and lower bounds. The long-run coefficients in the output section LR, represent the equilibrium effects of the independent variables on the dependent variable.

#### 4.6 GMM model

This model estimates parameters directly from moment conditions imposed by the model. The imposed conditions can be linear or nonlinear in the parameters. The number of the moment conditions should be as many as number of unknown parameters for identification. GMM has the following advantages: it does not require normality assumption; it allows for heteroscedasticity of unknown form; it estimate parameters of variables even when the model cannot be solved analytically from first order conditions (Ergün and Göksu, 2013).

## 5. RESULTS AND DISCUSSION

### 5.1 ARDL Results

For the ARDL model we used log linearization format for the analysis; the results of the cointegration show that individually FDI, physical capital, agriculture, financial development, population growth and foreign exchange are each individually cointegrated with GDP. On the other hand, the long run coefficients show that FDI has negative and statistically significant relationship with GDP, while physical capital and Agriculture have positive and statistically significant relationship with GDP. But export, saving, financial development, population, foreign exchange and government size have statistically insignificant relationship with GDP in the long run. The results of ARDL bound testing show that there is cointegration between the variables in the study based on 5% level of significant. Hence, we rejected the null hypothesis that says there is not cointegration.

**Table 2: Long run coefficients**

Long Run Coefficients				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(FDI)	-0.185145	0.066624	-2.778944	0.0195
LOG(CAP)	0.641977	0.150082	4.277522	0.0016
LOG(XPT)	0.041971	0.078555	0.534284	0.6048
LOG(SAV)	0.042810	0.103186	0.414886	0.6870
LOG(AGR)	42.162476	15.442092	2.730360	0.0212
LOG(FD)	-0.188384	0.138209	-1.363041	0.2028
LOG(POP)	-2.587043	1.650991	-1.566964	0.1482
LOG(GOV)	0.007141	0.056500	0.126393	0.9019
LOG(FOR)	-0.002636	0.044088	-0.059798	0.9535
C	-424.039057	143.129055	-2.962634	0.0142

Source: authors' analysis using Eview

**Table 3: ARDL bound testing result**

Test Statistic	Value	K
F-statistic	2.764268	9
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	1.8	2.8
5%	2.04	2.08
2.5%	2.24	3.35
1%	2.5	3.68

Source: authors' analysis using Eview

## 5.2 GMM Results

For the GMM model we do not used log linearization; the results of the GMM analysis done with the study variables as instrumental variables and with no lag instrument show that FDI, Export, saving,

financial development, population growth and government size are statistically significant. Saving, population growth and government size are positively related with GDP, while FDI, export and financial development are negatively related with GDP.

**Table 4: GMM result**

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI	-7016961.	2281296.	-3.075866	0.0060
CAP	0.953044	0.704466	1.352859	0.1912
XPT	-635259.2	299868.2	-2.118461	0.0469
SAV	0.833967	0.352303	2.367184	0.0281
AGR	-8280354.	4107179.	-2.016068	0.0574
FD	-6.36E+11	1.46E+11	-4.363576	0.0003
POP	4338.634	977.2025	4.439851	0.0003
GOV	6.796275	1.098501	6.186865	0.0000
FOR	-3.68E+08	2.16E+08	-1.704890	0.1037
C	2.05E+11	1.86E+11	1.105531	0.2821

Source: authors' analysis using Eview

## 5.3 DISCUSSION:

The negative relationship between economic growth and FDI means that FDI did not have positive effect on economic growth despite a priori expectation of possible positive effects. This may be as a result of the insignificant amount of FDI in most of the periods when compared with the size of the GDP and its volatile nature. The positive relationship between GDP, in one hand, and physical capital and agriculture on the other shown by ARDL analysis is expected and is supported by both the theoretical and empirical literature. The positive relationship between GDP, on the one hand, and saving, population growth and

government size, on the other hand, as shown by GMM results was also expected a priori. It means that increases in saving, population and size of government help economic growth in Nigeria. The finding on the role of population growth on economic growth in Nigeria is in line with the work of Esu and Udonwa (2016); Tartiyus, Dauda and Peter (2015). The positive relationship between GDP and savings, physical capital and government size is supported by the work of Udejaja and Onyebuchi (2015); Nyoni and Bonga (2018); Egbulonu and Ajudua (2017); Ismaila and Imoughele (2015).

## 6. CONCLUSION AND RECOMMENDATIONS

The example of the East Asian success stories has always been cited to show how these countries moved from poverty to wealth. Sustained economic growth is what made that possible. Nigerian quest for economic growth and development cannot be completed without conscious effort on the part of government towards providing enabling environment for growth. Good macroeconomic management has been the antidote to perennial problems such as government lack of funds, inflation and balance of payment issues. This paper has tried to find out the factors that determine economic growth in Nigeria in the last three decades. In the process it has discovered that physical capital, agriculture, saving, population growth and government size have positive effects on economic growth in Nigeria during the study period. The paper recommends increase in physical capital build up, more development of the abundant potentials in the agricultural sector and increase in national saving through government encouragements and favorable policies. These shall be anchored by good macroeconomic management of the nation's economy.

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