



Savings, Investment and Economic Growth in Nigeria: An Autoregressive Distributive Lag Approach

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Abstract: The study examined the impacts of savings and investment on economic growth in Nigeria, using some statistical tests such as ARDL estimating technique, Augmented Dickey Fuller (ADF) and Bound co-integration test on Nigerian data from 1980 to 2019. The estimation results show that savings and investment have negative and statistically significant effect both in the short-run and long-run on economic growth in Nigeria. These suggest that Nigeria has grossly low saving culture and may be experiencing deficient demand problems. This result affirms the classical view that both savings and investment equilibrates. Infrastructural facilities (proxy by electricity) have negative and significant effects on economic growth in Nigeria. The implications are that private provision of electricity is usually not cost effective and seems to have a negative implication on the business' profitability. It is therefore recommended that the focus of development policies in Nigeria should be on the monetary and fiscal policies, as to encourage high investment and saving culture.

Keywords: ARDL; Investment; Economic Growth; Saving; Structural Breaks; Nigeria

JEL Classification: E22; R15; D91; E2; E43; E63

1. Introduction

There has been ongoing debate on investment, savings and growth relationship in the economic development literatures from time immemorial and up till this moment no consensus has been reached. The classical school believes that saving represents limited financial means to execute investments and the two become equilibrated by

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interest rates in the long run. It simply implies from the perspective of the classical economists that shortage of savings can adversely affect economic growth. On the contrary, the Keynesian school of thought believes that investment will produce its own savings that is necessary and needed for its own funding and not the way the classical economists see it. Over the years in Nigeria most of the positive economic growth recorded by the economy has not been reflective of the domestic investment and savings at the particular period of time (Olomola, 2016). This has thrown more questions than answer as to the relationships among the three. For decades, there have been concerns about the crucial role of investment and mobilization of savings in the sustenance and reinforcement of economic growth in developing economies. Studies have shown that savings, investment and economic growth are closely linked (Barro, 1997; Agu, 2015; Khan & Reinhart, 1990). Nevertheless, a number of studies paid more attention to the nexus between investment and economic growth (see Liu et al. 2002; Roy & Mandal 2012; Temiz & Gokmen 2014; Iamsiraroj 2016). For example, Fabry & Zeghni (2002) observed that the economies that have rapid growth rate have the tendency of experiencing high investment. Recent financial crisis and the shock in oil prices in oil international market have triggered the interest of many oil producing economies to the importance of investment due to its hypothesized positive impacts on economic growth. Therefore, the main objective of this study is to examine the impacts of savings and investment on economic growth in Nigeria and to make some recommendations for further strategies to grow Nigeria's economy.

Many developing countries have poor and unsustainable economic growth because they have history of poor savings and investment. This poor growth performance consequently, leads to a decline in investment and savings, thus worsening the already precarious balance of payments position. Attempts to correct external imbalances by reducing aggregate demand may lead to a cycle of further decline in investment expenditure, aggravating the problem of unsustainable growth and declining savings and the rate of investment, (Khan & Villanueva, 1991; Tochukwu, 2018). National savings influence investment while substantial investment positively impacts on economic growth with its overall effects in creating employment in the economy (Agu et al., 2015; Firebaugh, 1992). Aside this, savings and investment are important factors that combine demand and useful assets to impact on economic growth of the economy. In addition, savings and investment speed up and maintain the course of development and productivity through capital creation.

The motivation for this study is hinged on the fact that dynamic interplay amongst the macro-economic indicators will influence policy-making positively. The novelty of this study relies on the fact that little study, if any, examined the interplay between saving, investment and economic growth in Nigeria in Autoregressive Distributed Lag (ARDL) environment using endogenous growth theory.

Nigeria is reputed to be buoyantly blessed with enormous mineral and human resources. Nevertheless, the country has been known to be high risk market for investment thus affecting savings and the sustainability of economic growth. For instance, in 1980 gross savings as a percentage of GDP rose from 0.49 percent to 3.3 percent in 1984. From 1984, savings keep declining till 2019 except for 2006 and 2012 when it stood at 2.6 percent and 2.3 percent respectively. In the same vein, investment as a percentage of GDP grew from 15.1 percent in 1980 to 22.8 percent in 1998. However, investment declined on the average till 2019 (Agu & Nyatanga, 2020; World Bank, 2018). On this note, World Bank (2018) noted that the level of domestic savings and investment in Nigeria are inadequate to fuel the growth needed to raise living standards and generate sufficient productive employment. The importance of investment in promoting economic growth cannot be over emphasized, as investment is an essential component of aggregate demand. Fluctuations in investment have considerable effect on economic activity and long-term economic growth (Belloumi & Alshehry, 2018). A few basic trends have emerged over the past few years as regards the aggregate investment income. This is because the growth rate registered in most African countries is usually low, as the level of investment is grossly inadequate (Khan & Reinhart, 1990). Nigeria witnessed economic boom in the 1970s and 1980s due to the boom in oil sector as a result of several political and civil unrests in the Middle East which also led to increased savings and a boom in the investment, more especially in the public sector in Nigeria (Agu and Nyatanga, 2020). Nonetheless, with the failure of oil market in the 1980s, the savings and investment rates declined, leading to fall in economic growth rate.

Nigeria has adopted many economic programmes to boost the saving-investment climate in the economy such as Subsidy Reinvestment and Empowerment Programme (SURE-P) in 2013, the Structural Adjustment Programme [SAP] in 1986; National Economic Empowerment Development Strategy [NEEDS] in 2007, Community Services Women and Youth Employment (CSWYE) in 2012, with little success (Oyekale, Adeoti and Oyekale, 2007; World Bank, 2015 and Ogwumike, 2002). However, the success of any programme in revitalizing the economy depends on the effectiveness of the programme in bringing the desired result to the economy after the reform process.

Investment in infrastructure is key to the development of the less developed countries (LDCs). This is because infrastructure enhances the usage of modern technology in production. Nigeria has been identified as one of the countries with decayed infrastructural facilities in the world (Agu, 2015). For example, electricity generation and distribution have been seen to deteriorate in the last two decades, hence, negatively affecting the production of goods and delivery of service (Greene & Villanueva (1991).

There are many studies done on the relationship between private investment and economic growth (see Blejer & Khan, 1984; Bosworth, 1993; Carroll & David, 1994; Greene & Villanueva, 1991; Ghura & Godwin, 1997) among others. These studies however focused on the impact of governance, credit availability, exchange rate and interest rate. However, to the best of the authors' knowledge, little or no studies have been done on the interaction between these trinity (savings, investment and economic growth) especially in Nigeria. This article's objectives among others are to determine the impacts of savings and investment on Nigeria economic growth with the view of ascertaining how these variables impact on Nigeria economic performance in both short and long-run. These objectives can only be achieved through a thorough time-series analysis and through an appropriate interplay of qualitative and quantitative analysis of Nigeria policies and performance. Country-specific studies of this sort are however few. Besides, the extant literature on the topic is riddled with inconclusive arrangements in terms of the size and signs of the coefficients of the chosen variables. A number of these literatures concentrate on the developed and advanced countries. However, our study focuses solely on developing country, Nigeria which is characterized by inadequate domestic savings and investment.

The rest of the paper is structured as follows: next section presents literature review, followed by methodology and data, then the results and discussion and lastly, conclusion and recommendations.

2. Literature Review

Investment can be defined as the outlay of money for future use. Investment in this study focuses on those on real assets; namely, land, infrastructure, capital goods and so on. Savings and investment have been identified as key to economic growth, given the egregious nature of Nigeria economy. Savings and investment can be seen as propelling forces that can move the Nigeria economy from a poverty ridden state to a state of buoyancy and economic stability.

Blejer & Khan (1984) investigated 23 economies using Ordinary Least Square (OLS) estimating technique and concluded that private investment and public investment complement each other to bring about economic growth. The study observed that the private investors will flourish only in a supportive environment of cost reductions in power, transport and communications. The huge money spent on the generation of power by the private domestic investors in Nigeria, would escalate the prices of their products. Many private domestic investors have closed down and many have relocated to other investment friendly areas, because of the high cost of generating power in the country. However, the usage of OLS technique may give a spurious

conclusion, as both the long run and short run estimates may not be captured with OLS.

Belloumi & Alshehry (2018) investigated the causality existing between domestic capital investment, foreign direct investment (FDI), and economic growth in Saudi Arabia between 1970 and 2015 and utilizing ARDL, FMOL and DOLS. The study noted that there is negative bidirectional causality between non-oil GDP growth and FDI and between FDI and domestic capital investment in the short run. While in the long run, domestic capital investment has a negative relationship with FDI. Though, this study used ARDL and incorporated investment and growth. It fails to use savings as one of the independent variables in the study.

Adams (2009) used OLS to estimate the effects of FDI and domestic investment on economic growth in Sub-Saharan Africa between 1990 and 2003. The result shows that FDI and economic growth have significant and positive relationship. The findings also show that at the onset, FDI had a negative effect but subsequently it showed a positive relationship. The result also shows a net crowding out effect. This result may have been seen differently if the study employed a long run estimating technique, as OLS may give a spurious estimation.

Lean & Tan (2011) examined the causality existing among Direct Investment and FDI inflows and economic growth in Malaysia between 1970 and 2009 using Johansen multivariate cointegration approach. The three variables under consideration have long run nexus, noting that in the short run, FDI impacts on economic growth while a unidirectional causality was observed from economic growth to FDI. This study incorporated FDI and economic growth but not savings. The study was also done in Malaysia which is more advanced than Nigeria economically. Therefore using the findings in this study to formulate policies in Nigeria might yield a wrong result.

(i) Investment, Savings and Environments

Environment has been seen as one of the main motivators and determinants of private investment and savings world over and especially in Nigeria (Agu, 2015). However, it was found by some researchers such as Balassa (1988); Greene & Villanueva (1991); Ghura & Godwin (1997) that investment environments do not affect private investment in sub-Saharan countries. However, Agu (2015) noted that political instability has made the climate for private saving and investment hostile in Nigeria. The study noted that political upheavals in the country from independence till date contributed to the reduction of people's confidence to invest in the country. A lot of bombing attacks by the Boko Haram sects, stampede, explosions, political unrest and kidnappings are discouraging private investment in recent times. The confidence of people must be rebuilt by putting a lasting solution to the political upheaval and civil unrest in the country, as to give room for more investment opportunities in the country. Yaw (2000) studied the economy of Ghana and observed that military

takeovers have created a hostile climate to private investment where the lagged private investment-GDP ratio was found to be positive and highly significant. The implication is that the consideration of investment climate cannot be neglected while making an investment decision.

(ii) Electricity (Energy), Investment and Economic Growth

Electricity (Energy) has been identified as the main intermediate input for production of goods and delivery of services. Every economy depends on the electricity to function effectively and increase their gross domestic product. Greene & villanueva (1991) investigated private investment in some developing countries using Two stage Least Square (2SLS) and observed that in most of the countries studied, electricity has a negative effects on investment and savings which eventually influenced economic growth badly. The study noted that private investment and Small and Medium Scale Enterprises (SMSEs) thrive in any economy with stable and low tarrif electricity supply, low communication tariff and low transportation costs which are often made available through public investment. Ntembe, Ajab and Tawah (2018) investigated the private and public investment effects on GDP using OLS methods and noted that public and private investments have positive and significant impacts on real GDP both in the short-run and in the long-run. Blejer and Khan (1984) studied 23 countries using VAR estimating technique and concluded that low and insufficient electricity generation and supply have the tendency of crowding out private investment. Furthermore, Agu (2015) also employed VAR method and noted that many investors in Nigeria generate their own electricity with power generating sets that run on fuel. This private provision of electricity is usually not cost effective. The study maintained that this has a negative implication on their profitability. Some of the private investors have been frustrated out of business, when they could no longer cover the cost of production. Nevertheless, these studies used VAR methods that only estimate short run relationship among variables. The study of such nature should have used ARDL technique that can assess both the short run and the ling run estimates.

(iii) Public Domestic Investment and Private Investment

Public investments can be seen as an impetus for total investment. Public investment can be subdivided into infrastructural and non-infrastructural. Blejer & Khan (1984) disaggregated the two public investments and observed that public investment in infrastructure complements private investment. Balasa (1988) investigated 30 countries and found that private investment is indirectly related with public investment. The study admitted that the negative relationship found between private and public investments was due to the inability of the private domestic investor to easily access funds from the capital market. The study equally blamed the inverse relationship on rivalry that exists between the public domestic and private investors over finished products. This competition could be as a result of the heavy tax levied

on the income of private investors which could escalate the prices of the product of the private investors because consumers will only patronize the product with moderate prices. However, these studies failed to put into consideration the government subsidies, tax reliefs and other favours private investments curvy from the government that have the ability of increasing their profitability.

(v). Savings and Economic Growth

A number of studies have looked into the nexus between savings and economic growth, including Bacha (1990); DeGregorio (1992); Otani & Villanueva (1990) and Stern (1991). However, most of the studies focused on the developed countries and very few were devoted to the developing countries. For example, Bacha (1990) utilized Ordinary Least Squares (OLS) technique and noted that higher savings positively influence economic growth. This finding corroborates apriori expectation, that domestic savings enhance economic growth via investment. Implying that, as a number of developing economies are capital importers, they need domestic savings for importation of capital for production and for investment purposes. Modigliani (1970) and Maddison (1992) found evidence of a positive association between savings and GDP. Nevertheless, contemporary studies by Bosworth (1993), Carroll & Weil (1994) noted that economic growth Granger-causes savings. Though the findings were in line with apriori expectation but contrary results may have been found if other long run estimating techniques were employed in the study other than OLS.

In all, most of the studies highlighted in the literature were either done in more advanced economies than Nigeria, used estimating techniques that may yield spurious results or may have used the variables different from the focus of this study.

3. Methodology and Data

The study primarily relied on the national income identity theory as the precursor for the model specification in this article.

The model for this study is generated from the national income identity of Keynesian economics. In the Keynesian tradition, particularly in a two-sector economy is characterized by the equilibrium national output as follows:

$$Y = (C+ I) \tag{1}$$

Or

$$Y = (C+ S) \tag{2}$$

Where Y is the national income, C is aggregate household consumption expenditure, I is aggregate investment and S is aggregate savings in the economy.

Therefore from the two equations it is deduces that :

$$I=S \quad (3)$$

This indicates that in the long run investment equilibrate savings. This is amplified by the classical economists.

It shows that Y can be defined as a function of both investment and savings as shown in equation 4

$$Y = f(S, I, \theta) \quad (4)$$

Where θ represent other shift factors of growth which include consumption.

The study employed annual data for the period 1980 – 2019 (the definition and sources of data used in this study are shown in table 1 below). The reason we chose this period is due to data availability, as well as that, this period combined the era of different economic policies of the Nigeria government. The study explored the impacts of different policies on the economic growth in Nigeria. It also examined the short-run and long-run effects of these variables on economic growth in Nigeria. It also tested for structural breaks using the Bai & Perron (2003) test and identified five structural breaks in the series (1986, 1999, 2006, 2013 and 2017)(see table 1, lower segment). Interestingly, these structural breaks coincided with the periods where some of the major government programmes were implemented. For instance in 1986, Structural Adjustment programme (SAP) was implemented and in 1999, the military handed over power to the civilian regime in Nigeria. In June 2005, Nigeria had US\$18 billion debt forgiveness from the Paris Club. Could the debt relief package be what contributed to the sharp structural break noticed in 2006? In 2013, Nigeria was negatively affected by the fall in crude oil price in the international market. Thus, to effectively control for the structural breaks effects, the study introduced structural dummy variables to control for their shocks in the variables.

Table 1. Definition and Sources of Data

Variables	Definition of Variables	Data Source	Justification for data used Sources/Citations
Gdpgr	Gross Domestic Product Growth Rate	Central Bank of Nigeria [CBN] IMF (World Economic Outlook).	Adams (2009); Barro (1997).
Savs	Savings	Central Bank of Nigeria [CBN].	Carroll Weil (1994).
Inv	Total Investment (Private and Public investment)	Nigeria Bureau of Statistics [NBS].	Belloumi & Alshehry (2018).
Infr	Infrastructure (proxy for electricity)	Nigeria Bureau of Statistics [NBS],	Firebaugh (1992)
Postab	Political Stability	Dummy Variable ((a Dummy Variable, 1 for military rule and zero for civilian rule)	Agu (2015)
Capf	Capital Formation	Central Bank of Nigeria [CBN].	Ghura & Godwin (1997)
	Structural Dummy Variable		
DX1	Dummy variable 1 (1986-1999)		
DX2	Dummy variable 2 (1999- 2006)		
DX3	Dummy variable 3 (2006-2013)		
DX4	Dummy variable 4 (2013-2017)		
DX5	Dummy variable 5 (2017-2019)		

Source: Author's 2020

By nature, the data employed in this study is time series; therefore, it is important to test for the stationarity properties of the variables to verify if the association between variables is stationary in levels or after first differencing. This is because non-stationary series may produce a spurious relationship. Therefore, the Augmented Dickey-Fuller (ADF) unit-root test was conducted (Dickey and Fuller, 1981). Table 2 shows a mixed series. Some series were stationary in levels, $I(0)$, while some were stationary after first differencing, $I(1)$. The study also conducted co-integration test using ARDL Bounds Test. The test results shows that the F-statistic at 5% level of significant was 3.835, which is above the upper bound (3.3), showing that there is a long run cointegration in the series.

Table 2. Unit Root Result

Series		Level	First differenced	Conclusion
gdpgr	T _μ	-3.939	-5.941***	I(1)
	T _τ	-3.53	-3.533***	
Savs	T _μ	-2.939	-2.941***	I(1)
	T _τ	-2.53	-3.533***	
inv	T _μ	-4.984**	-5.824***	I(0)
	T _τ	-3.227*	-5.739***	
infs	T _μ	0.924	-5.752***	I(1)
	T _τ	-1.867	-6.069***	
postab	T _μ	-2.505	-6.962***	I(1)
	T _τ	-2.283	-7.046***	
capf	T _μ	-2.985**	-5.824***	I(0)
	T _τ	-3.227*	-5.739***	
<i>Engle and Granger Cointegration test on residuals</i>				
Residuals	T _μ	3.3543**	-	I(0)

Source: Author's 2020

Note: i. T_μ = With Trend and T_τ = without Trend. ii. *** indicates statistical significance at 1% level, ** at 5% level, and * at 10% level

Considering all the tests conducted earlier, namely, the unit root test, cointegration test, structural break test among others, the study adopted the Autoregressive Distributed lag (ARDL) approach. This is because ARDL technique can conveniently handle a mixed series I(1) and I(0)). The study leverage on the theoretical framework discussed earlier in the methodology where growth is defined as a function of savings and investment plus other shift factors and building on the models from the studies of Le & Suruga (2005) and Agu and Nyatanga (2020) who adopted endogenous growth model to examine the effects of independent variables on the dependent variable (economic growth), the functional model is defined as follows:

$$\text{gdpgr} = f(\text{savs}_t, \text{inv}_t, \text{Infs}_t, \text{postab}_t, \text{capf}_t, \text{DX1986}, \text{DX1999},$$

$$DX2006, DX2013, DX2017) \tag{5}$$

Equation (1) is specified as an ARDL model in Equation 6 below.

$$\begin{aligned} \Delta gdpgr_t = & \alpha_0 + \sum_{t-i}^p \beta_i \Delta savs_{t-i} + \sum_{t-i}^p \delta_i \Delta inv_{t-i} + \\ & \sum_{t-i}^p \sigma_i \Delta infs_{t-i} + \sum_{t-i}^p \theta_i \Delta postab_{t-i} + \sum_{t-i}^p \varphi_i \Delta capf_{t-i} + \sum_{t-i}^5 \rho_j D_{jt} + \\ & \lambda_1 savs_{t-i} + \lambda_2 inv_{t-i} + \lambda_3 infs_{t-i} + \lambda_4 postab_{t-i} + \lambda_5 capf_{t-i} + \\ & \sum_{j-i}^5 \lambda_j D_{jt} + \mu_t \end{aligned} \tag{6}$$

Where the first part of the equation with $\alpha_0 ; \beta_i ; \delta_i ; \sigma_i ; \varphi_i$ and ρ_j , are the unknown coefficients of the estimated variables which denotes short run dynamics of the model. The second part with λ_1 to λ_j represents long run relationship and are the long run coefficients; while i is the lag length (Table 3 shows the ARDL lag determination to be one). The first difference operator is denoted by Δ ; D_{jt} (which is DX_1, DX_2, DX_3, DX_4 and DX_5) is the structural break notation, while μ_t is the error term. The null hypothesis in the equation is that $\lambda_1 + \dots + \lambda_j = 0$, which signifies the absence of a long run relationship.

The ARDL Lag Determination

Table 3. Lag Order Selection Result

VAR Lag Order Selection Criteria						
Lag	LogL	LR	FPE	AIC	SC	HQ
0	-3000.8	NA	829843	40.9371	41.099	41.003
1	-2007.3	320.33	9823.09*	31.7740*	38.446	34.485*
2	-2422.8	144.90	183446.5	34.8143	37.581	35.938

Source: Author's 2020

Diagonistic Tests

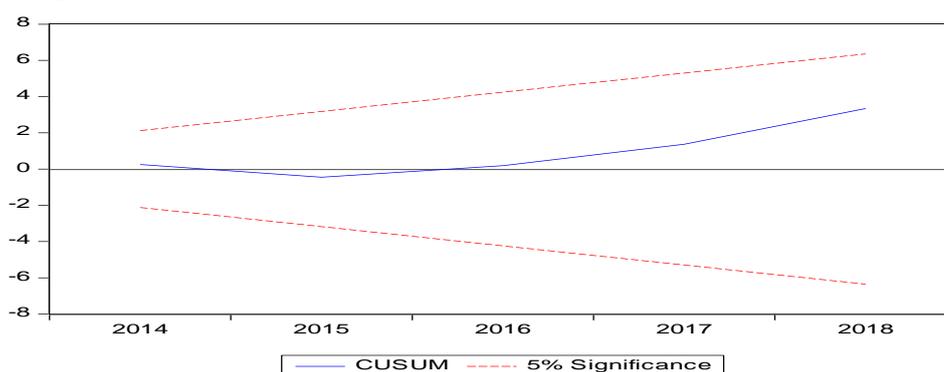


Figure 3. Stability Test (Cusum Test)

Source: Author's Computation, 2020

The condition for the CUSUM test stability criterion is: The blue line represents the model while the two red lines indicate 5% boundary within which the model has to be for the model to be stable. Since the blue line lies within the two red boarder lines, we conclude that the model is stable.

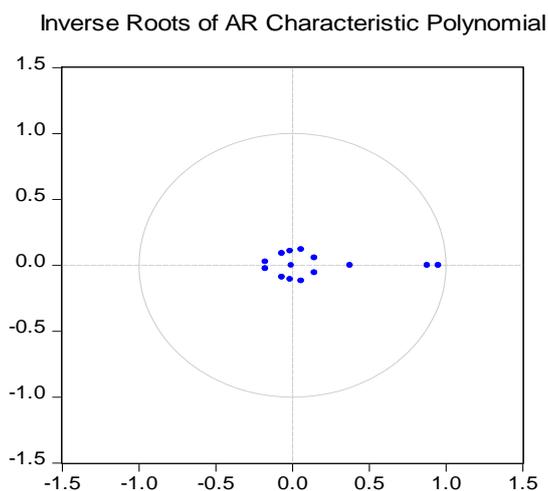


Figure 4. Inverse Roots of AR Polynomial Result

Source: Author's Computation, 2020

For the study to further strengthen the stability of the model, figure 4 shows the necessary and sufficient conditions for the test. The moduli of the eigenvalues of the dynamic matrix fall within the unit circle, implying that the estimated model appears stable. The framework for this analysis is appropriately modified to accommodate the peculiarities of a developing country. It also builds on the existing cross-country literature on saving and investment which quantifies the effects of a variety of policy and non-policy variables on economic growth. The ARDL model is flexible enough to accommodate other relevant theories. The model can accommodate a comprehensive analytical framework without changing its flexibility and this makes it possible for other relevant theoretical considerations to be incorporated, thus forming an integrated analytical framework, without varying its essential structure.

4. Results and Discussion

Considering the short run and long run estimates in table 4, savings have a negative and statistically significant effect both in the short-run and long-run on economic growth in Nigeria. A-one percentage change in savings will reduce economic growth by 0.512 percent and 0.82 per cent in the short-run and in the long-run respectively. These results seems to negate the results of Modigliani (1970), Maddison (1992), Bosworth (1993) and Carroll & Weil (1994) and Reza, Reed & Tasan (2014) who

observed a positive relationship between savings and the economic growth of their countries of study. These studies noted that as the incomes of private agents grow faster, their investment rate increases and increasing the economic growth. Hence, corroborating the consumption habits theory. Modigliani (1970) noted that any policy that boosts private investment and saving in the long run is expected to have a strong influence on income growth. Given the historical close link between saving and investment rate, a rise in these variables are expected to increase income and growth. However, our finding corroborates with Quah's (1993) study who noted that middle-income countries are slowly vanishing. We can therefore infer from this result that Nigeria has a low savings culture and this negatively influenced the economic growth in Nigeria. It seems therefore that the low income in Nigeria contributed to low savings, as no one without enough income can have a substantial savings for investment.

Table 4. Short-Run and Long Run Results

<i>Short-run Estimates</i>		<i>Long-run Estimates</i>	
<i>Variables</i>	<i>Coefficient</i>	<i>Variables</i>	<i>Coefficient</i>
D(Savs)	-0.512* [4.350]	Savs	-0.829*** [-3.443]
D(inv)	-0.986*** [2.603]	Inv	-1.304** [2.408]
D(lninfs)	-0.526 [0.890]	Infs	-0.035** [0.337]
D(postab)	0.129*** [0.412]	postab	0.086 [-2.890]
D(lncapf)	0.726*** [-3.950]	lncapf	0.986* [0.890]
ECT(-1)	-0.763 [-8.015]	Constant	75.014*** [2.813]
D(DX ₁)	-0.05177 [-0.696]	DX ₁	0.031 [0.298]
D(DX ₂)	-0.11019 [-1.758]	DX ₂	0.049 [0.514]
D(DX ₃)	-0.05177 [-0.696]	DX ₃	0.031 [0.298]
D(DX ₄)	-0.03073 [-0.348]	DX ₄	0.126 [1.348]
D(DX ₅)	-0.07511 [-0.739]	DX ₅	-0.133 [-0.988]
R-squared	0.940588	Durbin-Watson stat	2.198786

Source: Author 2020

- Note: i. *** indicates statistical significance at 1% level, ** at 5% level, and * at 10% level
ii. Numbers in parentheses are t-ratios

Surprisingly, the estimated results show that investment negatively and significantly affects economic growth in Nigeria both in the short-run and in the long-run. In the short-run, a one percent change in investment lead to 0.986 percent decrease in the short-run and 1.30 percent decrease in the long-run. This result negates Ntembe, Ajab & Tawah (2018) who noted that public and private investments have positive and significant impacts on real GDP both in the short-run and in the long-run. Though, many studies found evidence for positive investment-growth relationship, there are many reasons for negative investment-growth relationship found in this study. This may be connected to low confidence of foreign direct and private investors in the economy, high interest rate and decreasing house price which result in low aggregate demand spending. Additionally, the study also envisaged that it could be because Nigeria is largely an agrarian society with low manufacturing and low technical know-how on large foreign production.

The result also shows that infrastructural facilities (proxy by electricity) have negative and significant effects on economic growth in Nigeria. This corroborates Greene and villanueva (1991) who observed that in most of the countries studied, electricity has negative effects on investment and savings which eventually influenced economic growth badly. The study noted that private investment and Small and Medium Scale Enterprises (SMSEs) thrive in any economy with stable and lower tariff electricity supply and lower communication tariff and low transportation costs which are often made available through public investment. Blejer & Khan (1984) also concluded that low and insufficient electricity generation and supply has the tendency to crowd out private investment. Furthermore, Agu (2015) noted that many investors in Nigeria generate their own electricity with power generating sets that run on fuel. The implication is that private provision of electricity is usually not cost effective and has a negative implication on their profitability. Consequently, some of the private investors have been frustrated out of business, when they could no longer cover the cost of production as a result of high cost of production.

The negative effects of investment and savings found in this study are not surprising, as the classical economists noted that at equilibrium, savings equal investments. We can infer from the result therefore that Nigeria has been characterized by inadequate investment that can enhance and sustain the economic growth.

The estimated results also show that political stability influences economic growth positively both in the short-run and in the long-run. This result corroborates Yaw (2000) who studied the economy of Ghana and observed that military takeovers have created a hostile climate to private investment where the lagged private investment-

GDP ratio was found to be positive and highly significant. We can therefore infer from this finding that political instability has made the climate for private saving and investment hostile in Nigeria. Political upheavals in the country from independence till now contributed to the reduction of people's confidence to invest in the country. A lot of bombing attacks by the Boko Haram sects, stampede, explosions, political unrest and kidnappings are discouraging private investment in recent times). The confidence of people must be rebuilt by putting a lasting solution to the political upheaval in the country, as to give room for more investment opportunities in the country.

Finally, capital formation has significant and positive effects on economic growth in Nigeria. A one percent increase in capital formation increases economic growth by 0.726 percent and 0.986 percent in short-run and in long-run respectively. The implication is that the more capital goods a nation has at its disposal, the more goods and services it can produce. Increases in aggregate demand created by the availability of goods and services will lead to economic growth.

The speed of adjustment variable (ECT (-1)) shows a coefficient of -0.67 and the probability value is significant (0.0000). The implication is that 67 percent of the short-run disequilibrium is corrected in the current year. Therefore, it takes one year and some months to adjust the model to a long-run equilibrium.

5. Conclusion and Recommendations

The study used some statistical tests such as ARDL estimating technique, Augmented Dickey Fuller (ADF), Bound test co-integration test, Bai-Perron (2003) structural break test among others on Nigerian data from 1980 to 2019 to determine the impact of savings and investment on economic growth in Nigeria. The estimation results found that savings have a negative and statistically significant effect both in the short-run and long-run on economic growth in Nigeria, noting that low savings negatively influenced the economic growth in Nigeria. The estimated results also show that investment negatively and significantly affects economic growth in Nigeria both in the short-run and in the long-run. The result also depicts that infrastructural facilities (proxy by electricity) has negative and significant effects on economic growth in Nigeria. The implications are that private provision of electricity is usually not cost effective and seems to have a negative implication on the business profitability and the study noted that some of the private investors have been frustrated out of business, when they could no longer cover the cost of production. As opposed to political instability, political stability influences economic growth positively both in the short-run and in the long-run. The study concluded therefore that in the periods of instability, private saving and investment climates are usually hostile in Nigeria. Political upheavals in the country from independence till date

contributed to the reduction of people's confidence to invest in the country. Finally, capital formation has significant and positive effects on economic growth in Nigeria. The implication is that the more capital goods a nation has at its disposal, the more goods and services it can produce. Increases in aggregate demand created by the availability of goods and services will lead to economic growth. It is therefore recommended that the focus of development policies in Nigeria should be on the monetary and fiscal policies, as to encourage high investment and saving culture.

This will promote economic growth in the long-run in Nigeria. Secondly, policy thrusts should include revitalizing a comprehensive energy sector to enhance electricity supply which would encourage small and medium scale industries. If these recommendations are efficiently adhered to, it has the capacity of promoting sustainable economic growth in Nigeria. Considering the contributions of the paper to the economic theory and debate, it is obvious that the findings tilt toward the equilibration of investment and savings which is the crux of the classical theory. Nonetheless, the believes of the Keynesian school of thought that investment produces its own savings necessary for its funding might not be totally ruled out. However, for investment to perform this role enabling environment for investment to thrive must be created and this is nonexistent in Nigeria.

Lastly, it is pertinent to note that even though this paper has concentrated on Nigeria, its results can be applied to other African countries not previously studied. They contain some valuable lessons for informing policy measures in the current thrust towards greater mobilization of investment and encouraging savings in the African continent.

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