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Macro-Economic Policy and Investment Growth in Nigeria: Autoregressive Distribution Lag Model

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Abstract

The dwindling profile of Nigeria investment growth is a clear point which speaks volumes of the position of Nigeria fiscal and monetary policy in the economic management. Nigeria economy over the years have experienced a handful of investment, but despite the funds invested by both the public and the private, the investment performance in Nigeria are still epileptic in nature, the infrastructures to improve commerce with the system or social amenities to raise the welfare of average citizen of the economy are not there yet. Therefore, the study examined the effect of macroeconomic policy on investment growth in Nigeria between 1981 and 2019. Macroeconomic policy was proxied by fiscal and monetary policy while investment growth was proxied by growth rate of gross capital formation. With ex-post facto research design, an autoregressive distributed lag model was utilized. The study established an occurrence of long-run equilibrium relationship among macroeconomic policy and investment growth indicators. The empirical findings shows that while fiscal balance is positively and statistically significant to influence investment growth [β = 0.000162; P – value = 0.0435], monetary policy rate is negative and statistically insignificant to effect Nigeria investment growth [β = -0.0112; P – value = 0.7165]. More so, real exchange rate is positive and statistically significant to influence Nigeria investment growth at 5% level [β = 0.0052; P – value = 0.0013]. The findings of the study hold it firm that fiscal policy plays an important roles in enhancing a continuous growth in the process of Nigeria investment. While it is also pertinent to note that exchange rate also stimulate investment growth in Nigeria, however, monetary policy driver of investment growth has been ineffective. It is therefore, recommended that Central Bank Monetary Policy on monetary policy rate should be revisited since a lower monetary policy rate can have a statutory effect on general lending rates. Stability of monetary policy rate is crucial for investment growth, hence stable and effective monetary policy rate should be the utmost concern of the monetary policy authority.

Keywords: Fiscal Policy, Monetary Policy, Investment, Gross Capital Formation, Autoregressive Distributed Lag Model, Growth

Introduction

The development literature placed a strong emphasis on the significance of investment growth for economic growth and development. Emerging economies face difficulties with investment stability and growth, in addition to their struggles with achieving sustainable growth and development to meet the demands of 21st-century economies. Growth in investment has been prioritized by the majority of governments in emerging economies. Numerous policies have been put in place by these governments with the goal of boosting

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domestic investment growth. The implementation of dynamic economic policies is the result of the need to improve citizens' living standards, lower unemployment, increase capacity utilization, which boosts productivity, and increase foreign exchange earnings, all of which are entwined with investment growth (Ugwuegbe & Uruakpa, 2013). There are two categories of macroeconomic policy instruments that these active policy measures fall under (Jahan, Mahmud & Papageorgiou, 2014). The two main tactics for controlling the economy's resources and demand pressures are fiscal and monetary policies.

Numerous academic studies support the importance and role of monetary and fiscal policy in the context of investment growth. To solve these problems, numerous studies have examined the impact of monetary and fiscal policies on investment growth. Afonso and Jalles (2015) made a significant contribution to the study of the fiscal impact on a nation's economy by illuminating the fact that the composition of the fiscal system has different effects on long-term growth. The three main fiscal policy indicators, according to Ogar, Nkamare, and Emori (2014), are government spending, taxes, and deficits. Because fiscal policy is goal-oriented, it is frequently designed to achieve price stability, full employment, economic growth, income redistribution, a fixed and stable exchange rate, a favorable balance of payments, and assistance to friendly nations.

To increase investment growth, nations have taken steps to strengthen the ties between monetary and fiscal policy. Like most African nations, Nigeria's monetary and exchange rate policies continue to be focused on achieving or maintaining price stability. In nations where inflationary pressures have never subsided and exchange rates have remained relatively volatile, monetary policy rates have been lowered to stimulate growth. If exchange rate pressures and high fiscal deficits continue, there are still risks. The dwindling profile of investment growth in Nigeria's economy is an outright sign of the nation's deficiency in monetary and fiscal management of the economy. The Nigerian economy has seen some investment growth over the years, but despite money invested by both the public and private sectors, the performance of the sectors is still epileptic in nature. Neither social amenities nor infrastructure to improve commerce with the system or the welfare of the average economy citizen are yet in place. This has prompted several studies to raise an eyebrow, and many have concluded that the ineffective fiscal and monetary policies, as well as corruption, among other factors, have contributed to the low rate of investment. And now, the idea that fiscal and monetary policy should have a positive effect on economic investment is intuitively unappealing. As a result, this study looked at the impact of fiscal and monetary policy on investment growth in Nigeria.

The concluding part of this paper is structured as thus: Section two reviewed of literature on fiscal policy, monetary policy and investment growth, section three outlines the methodology adopted for the study, while results were presented in section four, section five outlines conclusion and recommendations.

Literature Review

Theoretical Review

There are several theories related to investment. Theories like Capital Asset Pricing Model (CAPM), Arbitrage Pricing Theory etc. takes a focal leads in the theory of investment. The difference between CAPM and arbitrage pricing theory is that CAPM has a single non-company factor and a single beta, whereas arbitrage pricing theory separates out non-company factors into as many as proves necessary. However, this study takes a critical view on Arbitrage Pricing Theory (APT).APT was put forward by Stephen Rose (1976) to access the asset pricing which insulated that investment returns followed a linear relationship. This linear relationship can be predicted by macroeconomic variables. One of the assumption of APT depicts that APT operates with a pricing model that factors in many sources of risk and uncertainty. APT model looks at several macroeconomic factors that, according to the theory, determine the risk and return of the specific asset. Also another assumption of APT pointed out that macroeconomic factors provide risk premiums for investors to consider because the factors carry systematic risk that cannot be eliminated by diversifying. Lastly, The APT suggests that investors will diversify their portfolios, but that they will also choose their own individual profile of risk and returns based on the premiums and sensitivity of the macroeconomic risk factors. Risk-taking investors will exploit the differences in expected and real returns on the asset by using arbitrage.

Harding, (2007) supported that when testing the theory is the number of securities that make up a sample or population. There is tendency that the more the number of securities under investigation, the more the number of securities under investigation, the more the number of explanatory factors that will be found relevant. One eventual criticism on APT was that these macroeconomics factors are not identified in terms economic fundamentals. The APT empirical model implies that it is not important what the factors are, as the model is formulated without any reference to their identity. All that we need in order to obtain approximate APT pricing, is an admissible proxy of appropriate dimension.

Conceptual Review

Fiscal policy is undoubtedly one of the most central tools used by government to achieve macroeconomic stability in the economy (Ihendinihu, Jones & Ibanichuka, 2014).). Fiscal policy is conventionally been associated with the use of taxation and public expenditure to influence the level of economic activities. Fiscal policy deals with government deliberate actions in spending money and levying taxes with a view to influencing macroeconomic variables in a desired direction. This includes sustainable economic growth, high employment creation and low inflation (Microsoft Corporation, 2004). Thus, fiscal policy aims at stabilizing the economy. Increases in government spending or a reduction in taxes tend to pull the economy out of a recession; while reduced spending or increased taxes slow down a boom (Fisher, Dornbusch, & Schmalensee, 1990).

Fiscal policy involves the use of government spending, taxation and borrowing to influence the pattern of economic activities and also the level and growth of aggregate demand, output and employment. Fiscal policy entails government's management of the economy through the manipulation of its income and spending power to achieve certain desired macroeconomic objectives (goals) amongst which is economic growth (Medee & Nembee, 2011). Peter and Simeon (2011) define fiscal policy as the process of government management of the economy through the manipulation of its income and expenditure and to achieve certain desired macroeconomic objectives. Central Bank of Nigeria (2011) defined fiscal policy as the use of government expenditure and revenue collection through tax and amount of government spending to influence the economy. In finance, fiscal policy is the use of government revenue collection (taxation) and expenditure (spending) to influence the economy. The two main instruments of fiscal policy are government taxation and expenditure.

Geoff (2012) contended that fiscal policy involves the use of government spending, taxation and borrowing to affect the level and growth of aggregate demand, output and jobs creation. It is the government spending policies that influence macroeconomic conditions. These policies affect tax rates, interest rates and government spending, in an effort to control the economy. Fiscal policy is the means by which a government adjusts its levels of spending in order to monitor and influence a nation's economy. From all these definition, it was deduced that one of the regulatory policies used by government in achieving its objectives to bring about economic growth is fiscal policy. Fiscal policy is an outgrowth of Keynesian economics; its logical analysis suggests that it offers a sure-fire means of stabilizing the economy. The goal of modern

fiscal policy is to achieve economic efficiency and stability. In a modern economy, no sphere of economic life is untouched by the government. Two major instruments or tools are used by government to influence private economic activity; taxes and expenditure but not limited to these two, it may include public debt, public work among others.

Monetary Policy

There are many definitions of monetary policy. Anyanwu (1993) defines it as measures designed to regulate and control the volume, cost, availability and direction of money and credit in an economy in order to achieve some specified macroeconomic policy objectives. Obioma (1998) defined it as "a measure designed to influence the availability, cost and direction of money and credit in pursuit of specified economic goals". It therefore basically deals with the control of the money stock in order to influence macroeconomic variables such as domestic prices, employment, balance of payment equilibrium and sustainable economic growth (Ogwuma, 1994).

Monetary policy is concerned with discretionary control of money supply by the monetary authorities (Central Bank with Central Government) in other to achieve stated or desired economic goals (Abata, Kehinde, & Bolarinwa, S. A. 2012). Governments try to control the money supply because most governments believe that its rate of growth has an effect on the rate of inflation. Hence monetary policy comprises those government actions designed to influence the behaviour of the monetary sector. Abata, Kehinde and Bolarinwa (2012) further define monetary policy is the deliberate use of monetary instruments (direct and indirect) at the disposal of monetary authorities such as central bank in order to achieve macroeconomic stability. Monetary Policy is essentially the tool for executing the mandate of monetary and price stability. Monetary policy is essentially a programme of action undertaken by the monetary authorities generally the central bank, to control and regulate the supply of money with the public and the flow of credit with a view to achieving predetermined macroeconomic goals (Dwivedi, 2005).

Monetary policy is referred to as either being on expansionary policy or a contractionary policy. Expansionary policies increase the size of the money supply, or decrease the interest rate. A policy is referred to as contractionary if it reduces the size of the money supply or raises the interest rate. Furthermore, monetary policies are described as follows; accommodative, if the interest rate set by the

Central monetary authority is intended to create economic growth, neutral, if it is intended neither to create growth nor combat inflation; or tight, if intended to reduce inflation (Orphanides, 2008).

Monetary policy as one of the tools of controlling money supply in an economy of a nation by the monetary authorities in order to achieve a desirable economic growth. Monetary policies are effective only when economies are characterized by well-developed money and financial markets like developed economies of the world. This is where a deliberate change in monetary variable influences the movement of many other variables in the monetary sector. Monetary policy consists of a Government's formal efforts to manage the money in its economy in order to realize specific economic goals. Three basic kinds of monetary policy decisions can be made about: the amount of money in circulation; the level of interest rate and the functions of credit markets and the banking system (Ogunjimi, 1997).

The combination of these measures is designed to regulate the value, supply and cost of money in an economy, in line with the level of economic activity. Excess supply of money will result in an excess demand for goods and services, prices will rise and balance of payments will deteriorate. The challenge of monetary policy management rest wholly on monetary authorities which has over the years been committed to its effective control.

Monetary policy can either be contractionary, expansionary, neutral or accommodative. Contractionary monetary policy is the use of monetary tools to reduce money supply or to raise the interest rate, while expansionary aim at increasing the money supply. Accommodative policy tends to lower the cost of capital in order to stimulate economic activities and engender economic growth, while monetary policy is neutral when such policy is not targeting the expansion of economic activities nor reducing inflation.

Most scholars are of the view that monetary policy emanates from Central Bank that sets the standard rules and guidelines for each year's monetary policy. For instance, the Year 2000s Monetary Policy and Credit Policy measure as published by Central, Bank states that "monetary policy shall seek to subdue inflation as single digit annual rate". Essentially, therefore, monetary policy is the policy of the Central Bank of any nation to control and regulate money supply in the economy to achieve the desire, economic policies or goals in any particular year or time. Ogwuma (1994) did not only define monetary policy as other scholars above, but also pointed out that monetary policy can be represent in three parts: The assembly and analysis

of wide range of data on the economy and the appraisal of Current policies. The development or forecasts aimed at determining the future course of the economy in the absence of policy changes. Developing and evaluating policy options for overcoming the likely problems in short and medium term. He further noted that policy formulation exercise involves developing a consistent set of targets for the growth of output, rate of inflation, the fiscal deficit of the Federal Government and its financing, the outcome of the balance of payment and demand for money. Ogwuma (1994) mentioned instruments used in the third quarter of 1992 "which deemphasize on the use of direct instrument of monetary control, but maintain the use of stabilization securities as part of the control to contain the large injections of liquidity.

Investment

Investment is generally classified into four major components: the private domestic investment, the public domestic investment, the foreign direct investment and portfolio investment. Private domestic investment refer to gross fixed capital formation plus net changes in the level of inventories whereas public investment includes investment by government and public enterprises on social and economic infrastructure, real estate and tangible assets. The combination of private investment and public investment is normally referred to a Gross Fixed Capital Formation. The foreign investment, when it is on tangible asset, is referred to as Foreign Direct Investment (FDI). It is called portfolio investment when it is on shares, bonds, securities, etc. (Bakare, 2011).

Stylized facts on Macroeconomic Policy and Investment Growth in Nigeria.

The Nigeria economy is characterized of middle-income, mixed economy and emerging market which is accompanying with expanding manufacturing, financial, service, communications, technology and entertainment sectors. It is ranked as the 26th-largest economy in the world in terms of nominal GDP, and the 24th-largest in terms of purchasing power parity (WDI, 2020). Nigeria has the largest economy in Africa which produces very high quantity of goods and services for the sub-continent of West African (Manufacturing Sector Report, 2015). Investment growth in Nigeria during the period 1980s to 2018 are characterized by mixed growth rate that is attributed to several inconsistency in macroeconomic policies and structural bottlenecks. As depicted by the figure 1, gross capital formation fall drastically in the early 1980s from 865 billion to 629 billion, 417 billions subsequently. In the early structural adjustment programme initiative, the GCF continuously decrees to eventual all-time low of 143 billion in 1988. However, prior to the political and economic ramification of 1990s, the GCF does not seems to improve

until the 2001. In the light of highly expansionary public sector fiscal policies in <u>2001</u>, the government sought ways to head off higher inflation, leading to the implementation of stronger monetary policies by the Central Bank of Nigeria (CBN) and underspending of budgeted amounts. As a result of the CBN's efforts, the GCF eventually responds positively highest upsurge from the year 2005 till 2019.

Figure 1: Gross Capita Formation
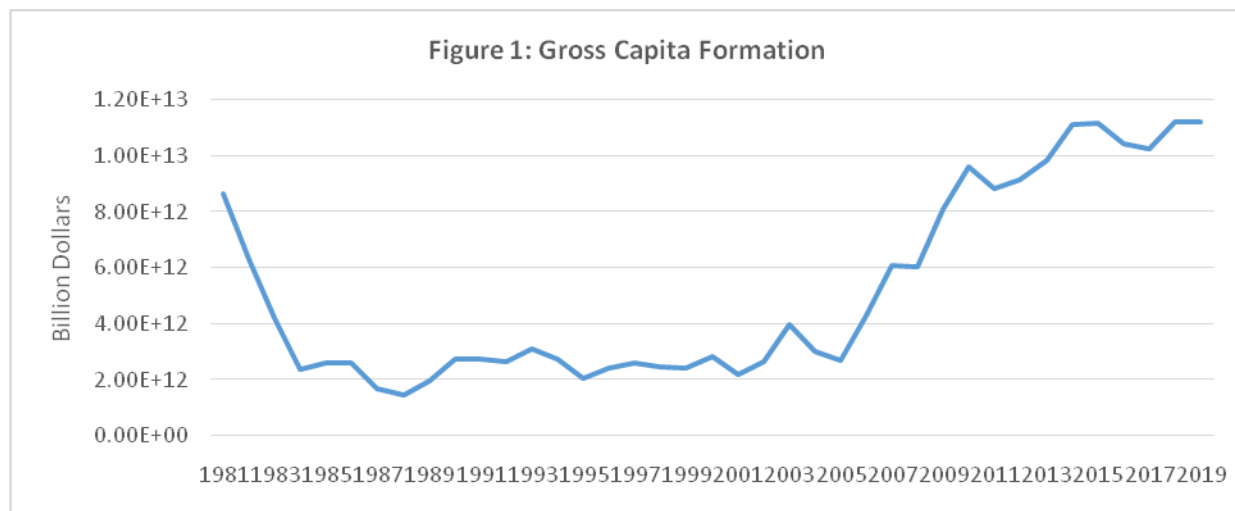
As it is clear from table 1, monetary policy rate achieved some phenomenal growth between the period 1981 and 2007/2008 (start of financial crisis). Nonetheless, beginning from 2008; most economic becomes worst hit including the Nigeria economy which as a result eventually resulted in the lower monetary policy rate of 6.0 in 2009 and 6,25 in 2010 reaching its lowest rate after the 1981 economic crises. Intuitively, these variations of economic response to the economic crises have also resulted in upward movement of the fiscal balance even from in the midst of crisis. Expanded government spending also has led to upward pressure on exchange rate responses which potentially impact the underlying market fundamentals. The pertinent question for policy is, therefore, whether and how fiscal and monetary policy can be used to improve investment. Therefore, more detailed study of the dynamic effect of fiscal policy and monetary policy on investment growth will provide further evidence on how investment response to macroeconomics policies. This is important for policy choice.

Table 1: Indices of Macroeconomic policy

	1981	1986	1999	2010	2019
Fiscal Balance (₦'Billion)	1.88	-3.62	1.5	3109.09	547.46
Monetary Policy Rate (%)	6.00	10.00	18.00	6.25	13.50
Real Exchange rate ($=₦)	0.617708	1.754523	92.3381	150.298	306.0837

Sources: Central Bank of Nigeria Statistical Bulletin, (2019)

Empirical Review

The study on macroeconomic policy (fiscal and monetary policy) on investment growth has generated some significant volume of empirical backgrounds. These studies are embedded with mixed results though with data accompany by cross sectional, time series and panel data. Some of these studies are country-specific while others are cross-country. Yet with little consensus to date. Some studies have confirmed limited or no impact of fiscal and monetary policy on investment growth. Kuralbayeva, 2013) used data sourced from selected developing economies of Latin America and the G-7 developed economics with Dynamic Stochastic General Equilibrium (DSGE) model to investigates optimal fiscal policy, economic growth and stock market development for these economies with focus on the impact of government expenditure and the combination of both public consumption and public investment on stock market development. The study introduced the concept of inelastic to the study of fiscal policy- stock market behaviour such that when the supply of foreign capital is elastic, as in the case of developed economics the stock market returns is enhanced by borrowing from abroad and both the public expenditure and taxes are adjusted to meet this development. On the other hand, in an emerging economy characterized with inelastic supply of foreign capital, the optimal fiscal policy is to adjust the public expenditure regime upward so as to attract fund to the stock market thus altering its return system. Similarly, Chatziantoniou, Duffy, & Filis, 2013) studied the interaction between monetary policy and fiscal policy as it affect the stock market behaviour for the developed economies of Germany, UK and US using quarterly data sourced from 1991 (1) to 2010(4). The result from the structural VAR shows that the interaction between the policies influences the stock market for the economies under view either through direct or indirect channels. From their study, evidence abound that the individual stance of the two policies as well as their interaction have a direct effect on the UK stock market behaviour. For Germany, the result shows that money supply has a positive impact on the stock market, and this impact is not filtered through the interest rate channel. The result from Germany also shows no evidence of a direct effect exist from fiscal policy strand on stock market movement, and that innovation

in the Germanys' stock market is induced by the interaction between fiscal policy and interest rate. For the US economy, the result shows that the impact of money supply on stock market is through the interest rates channel; and that no direct significant relationship exist between the fiscal policy instruments and the stock market, however, the stock market reacts to the level of interaction between fiscal expenditure and monetary policy variables.

In Nigeria study, Okwo, Eze, and Nwoha,. (2012) whose studies on monetary policy and outcomes on macroeconomic stability in Nigeria through the use of OLS implies that gross domestic product, credit to the private sector, net credit to the government and inflation were insignificant to explain price stability. This study suggested that monetary policy as a policy option may have been inactive in influencing price stability. More so, Owolabi and Adegbite (2014) examined the impact of monetary policy on industrial growth in Nigerian economy using multiple regression analysis. They analyzed the relationship between manufacturing output, treasury bills, deposit and lending, and rediscount rate and industrial growth, and found that the variables have significant effects on the industrial growth.

Osinowo, (2015) examined the effect of fiscal policy on sectoral growth in Nigeria by employing the ARDL and ECM methodology for the period 1970-2013. Results found total fiscal expenditure to have a positive impact on output of all sectors with the exception of Agricultural sector. Similarly Sineviciene and Vasiliauskaite (2012) studied the interaction of fiscal policy with Private investment in the Case of the Baltic States for the period 1995-2010 using annual data. The finding showed that fiscal policy indicators have positive and significant relationship with private investment in the Baltic States. The study indicates that current taxes on income, wealth, etc., indicators explain about 86 percent of the changes in private investment. Gross fixed capital formation by public sector indicator contributes about 80 percent of the private investment changes in the Baltic States.

Sineviciene and Vasiliauskaite (2012) investigates the effect of fiscal policy shocks on output and unemployment in Nigeria under the Keynesian framework by employing the Structural Vector Autoregression (SVAR) methodology to analyse annual series on the relevant variables for the period 1981-2015. Augmented Dickey Fuller (ADF) test for unit root result shows all variables to be integrated of order one and Johansen Cointegration test confirms the presence of long run association among the variables. Findings of the SVAR model shows shock in public expenditure as having a positive long- lasting effect

on output. Revenue shock was found to exert a positive effect (lower than that of public expenditure shock) on output. However, the effect of revenue shock on unemployment was found to be negative but short-lived. The study suggested that government should restructure its spending pattern by allocating more to productive expenditure. In the same vein, it was suggested that government should harness its revenue potentials by expanding its revenue base via effective and efficient taxation system and also through diversification of its revenue base.

Ajayi and Aluko (2017) evaluates the relative impact of monetary and fiscal policy in Nigeria from 1986 to 2014 using a modified St. Louis equation. Employing the Ordinary Least Squares estimation method, this study reveals that growth in money supply and export have a positive and significant effect on growth in output of the economy while growth in government expenditure has a negative and insignificant effect. This study provides evidence that monetary policy has a greater growth stimulating effect on the economy than fiscal policy.

On the empirical reviewed, there are mixed modelling in the studies, there are inconsistencies in the choice of variables as well as the gap in the scope of various studies reviewed. It is imperative to acknowledge that little is known about the consequences of fiscal and monetary policy on investment growth.

Research Methodology

A research study design entails the use of evidence-based procedures, protocols, and guidelines that provide the tools and framework for conducting a research study (Majid, 2018). Therefore, this study will adopt an *ex-post facto* as a research design. The study utilised an autoregressive distributed lag model (ARDLM) with time span 1981-2019. Descriptive statistics, Multicollinearity test of correlation, Unit root test and bound test were utilised along in the study.

Theoretical Framework and Model Specification

Arbitrage pricing theory is a multi-factor assets pricing model based on the idea of that an assets returns can be predicted using the linear relationship between investment returns and numbers of macroeconomic variables that capture the systematic risk.

$$E(R)_i = E(R)_i + E(I) - E(R)_z) \times \beta_n \dots\dots\dots i$$

Where:

$$E(R) = Expected\ returns\ on\ assets$$
$$R_z = Risk - free\ rate\ of\ return$$
$$\beta_n = sensitivity\ of\ the\ assets\ price\ to\ macroeconomic\ factors\ n$$
$$E_i = risk\ premium\ associated\ with\ factors$$

The beta coefficient in the APT models are estimated using linear regression. Historical securities returns are regressed on the factors to estimate its beta. From the APT theoretical evidence, the beta coincides with the macroeconomic policy of fiscal and monetary policy. From the theoretical framework, the study model is lay upon. This takes the form of a mathematical function:

$$Y = f(X)\dots\dots\dots ii$$

Y = Dependent Variable

X = Independent Variable

Where:

Y = investment growth

X_1 = Fiscal Policy

X_2 = Monetary Policy

The modelling structure in an attempt to replicate APT theoretical framework, the works of Ajayi and Aluko (2017) in their study on impact of monetary and fiscal policy in Nigeria was adapted: the empirical function in which this study proposed to stand is giving as:

$$RGDP = F(MS, GE, EXR)\dots\dots\dots iii$$

Where,

RGDP –Real Gross Domestic Product

MS= Money Supply

GE - Government Expenditure

EXR= Exchange Rate

Arising from equation 2, the study adapt it and re-present the study model as.

$$INVG_t = F(FB_t, MPR_t, REXC_t) \dots\dots\dots iv$$

Where,

GCF is Gross Capital Formation

FB – Fiscal Balance

MPR- Monetary policy rate

REXC is the real exchange rate

T is the time

In line with the functional form of the study, the empirical model for this study is presented below.

$$GCF_t = \beta_0 + \beta_1 FB_t + \beta_2\, MPR_t + \beta_3 REXC_t + \mu_t \text{--v}$$

Results and Discussions

Descriptive Statistics

Table 1: Descriptive Statistics

	GCFG	FSB	REXCR	MPR
Mean	8.167952	1442.367	88.54404	13.06579
Median	3.359867	198.8000	97.01772	13.25000
Maximum	59.30075	6404.790	306.0837	26.00000
Minimum	-26.22985	-242.1600	0.617708	6.000000
Std. Dev.	21.37274	1963.972	87.13761	4.100381
Skewness	0.641899	1.200726	0.802969	0.669171
Kurtosis	2.931723	3.165991	2.974325	4.231054
Jarque-Bera	1.997132	9.174660	4.084522	5.235529
Probability	0.368407	0.010180	0.129735	0.072966

Source: Author, 2021: *Gross Capita Formation Growth(GCFG), Fiscal Balance (FSB), Monetary policy rate(MPR) and Real Exchange Rate (REXCR)*

Table 1 presents the descriptive statistics of the variables used, the results indicates that the for over 40 years period, the gross capita formation growth in Nigeria was 8.168% per annum, while the Monetary policy ratewas 13.066% per annum over the same observation. More so, the Fiscal balance was 1442.367 billion per annum and exchange rate was 88.5444 naira per a dollar annually for 40 years observation period. Prior to the standard deviation, there is high discrepancy or variation among the data sets of the variables used. In table 1, the Jarque–Bera(JB) test indicates that all variables are normally distributed except fiscal

balance. The result also indicates that all these variables are positively skewed (>0, for normality should be close to 0).

Table 2: Correlation Matrix

	LGCF	FSD	EXCR	MPR
LGCF	1			
FSD	0.561682	1		
EXCR	0.719873	0.524882	1	
MPR	-0.426669	-0.233973	-0.047564	1

Source: Author, 2020: *Gross Capita Formation Growth (GCFG), Fiscal Balance (FSB), Monetary policy rate (MPR) and Exchange Rate (EXCR)*

Table 2 presents the correlation coefficients of Gross Domestic Product growth rate (RGDPGR), Per capita Income (PCI) and Gross capita formation (GCF) and the explanatory variables were fiscal balance (FSB), monetary policy rate (MPR) and inflation rate (INF). The results show that none of the independent variables posits perfect correlation among the pair. While the coefficient between FSB and MPR is 0.0172, FSB and INF is 0.0905 and MPR and INF is 0.3592 respectively. The values of the independent variables correlation coefficients exact low correlation, hence the possibility of having multi collinearity problem in the model is minimal.

Table 3. Lag length selection criteria.

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-582.4036	NA	3.20e+10	35.53961	35.72101	35.60064
1	-485.2160	164.9245*	2.35e+08*	30.61915*	31.52612*	30.92432*
2	-478.1062	10.34149	4.23e+08	31.15795	32.79050	31.70726
3	-464.2286	16.82126	5.44e+08	31.28658	33.64472	32.08002
4	-443.1580	20.43217	5.17e+08	30.97927	34.06298	32.01685
5	-430.2807	9.365289	1.02e+09	31.16853	34.97782	32.45024

Notes* indicates lag order selected by the criterion

Table 3 presents the Lag length selection criteria, based on different criteria: all selection criteria (LR, FPE, AIC, SC, HQ) support the inclusion of single lags. We opt for one lag for the ARDL estimations as this in accordance with the vast majority of the selection criteria,

Table 4: ADF and PP Test in Intercept Model at Levels and First Difference

VARIABLES	Level		First Difference		ORDER OF INTEGRATION	MAX. NO LAGS
	ADF	PP	ADF	PP		
LGCF	-2.038603	-1.098372	-11.66326	-4.758699	I (1)	1
FSB	-0.407856	-1.94095	-4.128076	-6.22000	I (1)	1
EXCR	-3.387746	1.348619	-	-4.15877	I (0), I (1)	1
MPR	-5.17655	-3.220906	-		I (0)	1

Source: Author, 2021: *Gross Capita Formation Growth (GCFG), Fiscal Balance (FSB), Monetary policy rate (MPR) and Exchange Rate (EXCR)*

Table 4 presents the ADF and PP unit root test using the intercept model to deduce the order of integration of the variables at 5% level of significant. The ADF results indicate that LGCF and FSB deduced a first order of integration. However, the EXCR and MPR intercept model indicates order of zero. The Philip Perron unit root test indicates that LGCF, FSB, and EXCR have a first order of integration while MPR indicates order zero. This is consistence with the assumption of ARDL as none of the series is integration of order 2.

Table 5: Bound Test for Co-integration Test

F-statistic	K		Lower Bound	Upper bound
4.978761	3	10%	2.72	3.77
		5%	3.23	4.35
		2.5%	3.69	4.89
		1%	4.29	5.61

Source: Author, 2020: *Gross Capita Formation Growth (GCFG), Fiscal Balance (FSB), Monetary policy rate (MPR) and Exchange Rate (EXCR)*

The results of the bound testing for co-integration of macroeconomic policy and investment growth in Nigeria is presented in table 5. The bound test compares the F-value of a model at 5% level with the lower bound test and upper bound test at 5% significant level. The model F-statistics value of 4.979 showed that the value is greater than both the lower and upper bound value of 3.23 and 4.35 respectively at 5% significant level. The result showed that there exists a long run relationship among macroeconomic policy

and investment growth in Nigeria. This implies that the null hypothesis of no co-integration among the macroeconomic policy and investment growth in Nigeria cannot be accepted.

Table 6: ARDL Model on fiscal and monetary policy influence the investment growth in Nigeria*.*

Variables	Coefficient	Stand. Error	T-Statistics	P–Value
Short-Run Coefficient and Error Correction Model				
D(FSB)	-0.000004	0.000029	-0.136071	0.8926
D(EXCR)	0.001659	0.000590	2.809912	0.0085
D(MPR)	-0.003539	0.010062	-0.351688	0.7275
CointEq(-1)	-0.317371	0.088038	-3.604947	0.0011

Source: Author, 2021: *Gross Capita Formation Growth (GCFG), Fiscal Balance (FSB), Monetary policy rate (MPR) and Exchange Rate (EXCR): Notes: ***, ** and * means the rejection of the null hypothesis at 1%, 5% and 10% respectively.*

The table 7 below presents the short run and error correction term of macroeconomic policy and investment growth in Nigeria. The negative and significance of the coefficient of error correction term [-0.317 (P – value = 0.000)] at 5% significant level indicates that the study conforms with theoretical exposition of the Error correction modelling with the negative value of the Error Correction term and corresponding significant Probability Value. The speed of adjustment from investment growth disequilibrium as warranted by the ECT (-1) is corrected at the speed of 31.74% yearly. The short run indication of fiscal balance (β = -0.000004, P= 0.8926) and minimum rediscount rate (β = -0.0035, P= 0.7275) had negative and insignificant influence on investment growth in Nigeria. While exchange rate (β = 0.0017, P= 0.0085) posit statistical posit influence on investment growth in the short run.

On the long run effect, the results reveal that the Fiscal balance is positive and statistically significant to influence Nigeria investment growth [β = 0.000162; P – value = 0.0435]. Monetary policy rate is negative and statistically insignificant to influence Nigeria investment growth [β = -0.0112; P – value = 0.7165]. While real exchange rate is positive and statistically significant to influence Nigeria investment growth at 5% level [β = 0.0052; P – value = 0.0013].

Adjusted R^2 of 0.9026 indicates the explanatory strength of the model. This means that the independent variables explained about 90.26% variation in Nigeria investment growth. This is a reliable evidences that the model is fit. The F-statistics = 67.7507 with the corresponding P-value of 0.0000 indicating a statistically significant model at 5% level.

Table 7: Long run effect of Macroeconomic policy on investment growth in Nigeria

	Long-Run Coefficient			
FSD	0.000162	0.000077	2.105354	0.0435
EXCR	0.005227	0.001481	3.529931	0.0013
MPR	-0.011150	0.030423	-0.366498	0.7165
C	28.471316	0.474013	60.064454	0.0000
R-Squared	0.916160			
Adjusted R-Squared	0.902638			
F-Statistics	67.7507***(0.0000)			
D.W Statistics	1.8446			
Diagnostics Test				
Breusch-Godfrey Serial Correlation LM Test	0.2488 (0.6179)			
Heteroskedasticity Test: Breusch-Pagan-Godfrey	4.47033 (0.4839)			
Jargue-Bera Normality Test	1.9665 (0.3741)			
Cusum Test	Stable			
Cusum Square Test	Stable			
Variance Inflation Factors (VIF)	2.559			

Source: Author, 2021: *Gross Capita Formation Growth (GCFG), Fiscal Balance (FSB), Monetary policy rate (MPR) and Exchange Rate (EXCR)*

The diagnostic test of the ARDL utilized the Breusch-Godfrey Serial Correlation LM Tests for Autocorrelations, ARCH Heteroskedasticity Tests and Jarque-Bera normality test. The serial correlation result shows the t-statistics value of0.2488 and probability value of 0.6179. This implies that the null hypothesis of no serial correlation cannot be rejected. The study concluded that there is no serial correlation in the model. Also, The Breusch-Pagan-Godfrey's heteroscedasticity test t-statistics value of 4.47033 and Probability value of 0.4839. Hence, it is safe to conclude that the model possess homoscedasticity. While the Jarque-bera statistics of normality test shows the t-statistics of 1.9665 and the probability value 0.3741 concluded that the residual is normally distributed since the P-value is greater than 0.05. Moreover, both cumulative sum (CUSUM) and cumulative sum of squares (CUSUM of SQUARE) was applied for the stability of the model. CUSUM and CUSUMQ statistics are plotted against the critical bound of 5% significance level. The stability forms show that the stability lines are well within the critical bounds at 5% significance level. This implies that all the coefficients in the error-correction model are stable. In general, the model is statistical stable for prediction and forecasting.

Conclusions and Recommendations

The study examined the effect of macroeconomic policy on investment growth in Nigeria between 1981 and 2019. Macroeconomic policy was proxy by fiscal and monetary policy while investment growth was proxy by growth rate of gross capital formation. The study employ autoregressive distributed lag model. The study established the occurrence of long-run equilibrium relationship among macroeconomic policy and investment growth indicators. The empirical findings shows that while fiscal balance is positively and statistically significant to influence investment growth [$\beta = 0.000162$; $P – value = 0.0435$], monetary policy rate is negative and statistically insignificant to effect Nigeria investment growth at 5% level [$\beta = -0.0112$; $P – value = 0.7165$]. While real exchange rate is positive and statistically significant to influence Nigeria investment growth at 5% level [$\beta = 0.0052$; $P – value = 0.0013$]. The result was in consonance with the findings of Udude (2014) whose study reveals that monetary policy though statistically insignificant possessed the expected sign while others contradicted expectation. Similarly, work done by Nwoko, Ihemeje and Anumadu (2016) also was in tandem with the findings as the empirical findings indicate that average price and labour force have significant influence on Gross Domestic Product while money supply was not significant. Unlike the study by Anumadu (2016) and Udude, (2014), Owalabi and Adegbite (2014) study does not augur well with the findings as they concluded that indicators of monetary policy have significant effects on the industrial growth. The findings of the study hold it firm that fiscal policy plays an important roles in enhancing a continuous growth in the process of Nigeria investment. While it is also pertinent to notes that exchange rate also stimulate investment growth in Nigeria, however, monetary policy driver of investment growth has been ineffective. It is therefore, recommended that Central Bank Monetary Policy on monetary policy rate should be revisited since a lower monetary policy rate can have a statutory effect on general lending rates. Stability of monetary policy rate is crucial for investment growth, hence stable and effective monetary policy rate should be the utmost concern of the monetary policy authority.

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