Effect of Selected Macroeconomic Variables on the Nigeria Economy, 1987-2020

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ABSTRACT
Since the introduction of the Structural Adjustment Programme (SAP) in 1986, the Nigerian economy has become more open to market forces and their attendant problems. All those while, the Nigerian economy had to deal with problems of high inflation rate and unstable economic growth and development, high and increasing rate of unemployment, trade imbalances, unstable exchange rate and high interest rate which had adversely affected economic growth and development in Nigeria. The main objective of the study is to examine the effect of selected macroeconomic variables on the Nigeria in economy. Specifically, the study examines the effect of exchange rate, interest rate, inflation rate, trade openness, foreign direct investment and money supply on the Nigeria in economy. Time series data covering 34 years, from 1987 to 2020 were analyzed with econometric techniques including Descriptive Statistics, Augmented Dickey Fuller Tests for Unit Roots, The Autoregressive Distributive Lag (ARDL) and the Diagnostics Tests to determine the reliability of the models in the study. The Diagnostics analyses carried out are the Normality Test, Serial Correlation, Multicolinearity Test, Heteroskedasticity, and Ramsey RESET Tests. Our findings revealed that inflation rate, trade openness, foreign direct investment and money supply have positive and significant effect on real gross domestic product in the short run while exchange rate and interest rate had insignificant effect on real gross domestic product in the short run. The study therefore concludes that selected macroeconomic variables have been an effective short run policy instrument that largely affects Nigeria in economy. The regulatory authorities in Nigeria should employ different set of measures to safeguard the value of the domestic currency in order to reduce the level of exchange rate fluctuations and improve Nigeria economy. Concerted effort should be made by policy makers to increase the level of output in Nigeria by improving productivity in order to reduce the prices of goods and services (inflation). This will enhance economic development in Nigeria. The Central Bank of Nigeria should employ an expansionary monetary policy that can increase the money supply to the real sectors to boost Nigerian economy.
Keywords: Selected Macroeconomic Variables, Nigeria Economy,

INTRODUCTION
One of the major goals of macroeconomic policy is to achieve sustainable economic growth and development. In Nigeria the government tries to influence the performance of the national economy through fiscal and monetary policies such as changing the level of taxation, government spending, or the supply of money or credit to the economy. Changing macroeconomic policies affect national income, prices, interest rates and exchange rates all of which influence economic development (Aroriode & Ogunbadejo, 2014).
Macroeconomics is still an evolving science but the goals of macroeconomic policy have been uniform globally. These include price stability, foreign exchange stability, full employment, balance of payment

equilibrium, economic growth and development. Although these policies are very important, they could not be pursued simultaneously because some of them conflict with one another. Therefore there is always a trade-off between the various objectives hence a country pursues a policy which is relevant to its stage of development at different times and in different circumstances (Ebikila, Agada, Lucky & Matthew, 2018).

Economic growth and development are at times used interchangeably but they are entirely two different concepts. Economic growth is the sustained increase in the country's gross domestic product (GDP) over a long period of time leading to an increase in per capita income (Ikeora, 2007). For this to be possible the rate of growth of GDP must be higher than the rate of population growth.

Economic development is a multi dimensional process leading to improvements in different facets of the economy and overall standard of living epitomized by reduction in both maternal and infant mortality, increased literacy rate, increased life expectancy, access to good medical services, increased good services (Barro, 1995).

Economists use different indicators to measure the level of economic development in a country. These include per capita income, poverty rate, literacy rate, declining infant mortality and maternal mortality, increasing life expectancy, real gross domestic product, capacity utilization, human capital development and industrial output etc. According to Adegbemi, (2018) economic development leads to the creation of more opportunities in the sector of education, health sector, research, human development, capacity utilization, industrial output, full employment and environmental conservation.

Savings provide developing countries (including Nigeria) with the much needed capital for investment which improves economic development. Increase in savings leads to increase in capital formation and production activities that will lead to employment creation and reduction of external borrowing by government. Low domestic saving rates may maintain low-growth levels because Harrod Domar model suggested that savings is an important factor for economic growth and development of a nation.

The main causes of unsustainable development include high inflation, rising foreign debt, currency exchange rate volatility, consume more and save less, poor corporate governance and policy somersaults, trade imbalance , energy and water shortages and political instability (Paul & Akindele, 2016). The relationship between major macroeconomic variables such as gross domestic product, consumer price index, current employment statistics, inflation, the labor market, currency exchange rate, interest rate and GDP growth rate depends on the state of economic development (Paul & Akindele, 2016)

Statement of the Problem

The influence of selected macroeconomic variables over the years has remained grossly insufficient to meet the expanding social political and public spending required in the fostering of economic growth.

The emergence of the Structural Adjustment Programme (SAP) in 1986, opened the Nigerian economy to the problem of high inflation rate and unstable economic growth and development, high and increasing rate of unemployment, trade imbalances, unstable exchange rate and high interest rate which had adversely affected economic growth and development in Nigeria (Abdul & Marwan, 2013).

Economists differ on which policies that could enhance long-run growth and development. Antwi, Mills and Zhao, (2013) argue that macroeconomic policies are necessary for long-term development. However, Anderson and Jodon (1968) postulated that monetary policy has greater and faster impact on economic activity thus suggesting that greater reliance be placed on monetary measures than fiscal measures in the conduct of stabilization policy.

Gatawa, Akinola, and Muftau (2017) asserted that monetary variable is more effective and dependable than fiscal variable in affecting changes in economic activities. Other scholars argue that the growth of human capital, that is, investment in education and training contributes significantly to long-run development (Barro, 1990).

Previous attempts to understand the effect of macroeconomic variables on Nigerian economy have resulted in conflicting opinions. The existing studies disagreed both in the line of significance and direction of relationship. A number of the findings highlight significant influence from macroeconomic

variables especially the moderating effect of money supply (Gatawa, Akinola, Muftau, 2017; Olawale, 2015; Muftaudeen, Hussainatu, 2014; Ojede, Amin, Daigyo, 2013; Madito, Khumalo, 2014). Despite agreeing that economic performance responds to macroeconomic variables, these studies are at variance as to the direction of the effects.

For instance Holden, Sparman, (2013) Pitia, Lado, (2015) Paul, Akindele, (2016) argued that all the macroeconomic variables they employed have a negative effect on development in both the long and short run suggesting that growing money supply, interest rate, exchange rate and credit extension will rather hamper development in Nigeria; as against the belief from studies like Onwanchukwu, (2015), Ozei, Sezgin, Topkaya, (2013), that macroeconomic variables enhance growth and development of the economy. A number of studies outrightly argued that macroeconomic variables have no effect on Nigerian economy (Onuorah, Osuji 2014; Olawunmi, Adedayo 2016). Aroriode and Ogunbadejo, (2014), noted that interest rate, exchange rate and inflation rate are not statistically significant tools for enhancing economic growth

These shortcomings have somehow contributed to the knowledge gap in the literature which this study closes by using data from (1987-2020), a period of 33 years and increasing the number of macroeconomic variables

REVIEW OF RELATED LITERATURE
Conceptual Review
Macro-economic Variables

Macroeconomic variables are indicators or main signposts signaling the current trends in the economy (Adekunle, Alalade & Okulenu, 2016). Keynes identified some main macroeconomic variables that relate to the economy as a whole as Gross Domestic Product (GDP), Exchange rate (EXR), Interest Rate, Inflation and Money Supply. Gross Domestic Product (GDP) is the broadest quantitative measure of a nation's total activity. It represent the monetary value of all goods and services produced within a nations geographic borders over a period of time especially one year (Aroriode & Ogunbadejo, 2014)

What is important is that the production takes place inside the territory of the country. Exchange rate is the rate at which one nation's currency is exchanged for another country's currency. If one nation's exchange rate is higher than another one, it affects the purchasing power of the lower exchange rate of a particular country, for example, if the naira rate is lower in comparison to the American dollar, Americans will have a higher purchasing power than Nigerians. Interest rate is the cost of borrowing money. Rising interest rate signals an expanding economy and when already high interest rate begins to rise even further and faster, it is a sure sign of the onset of inflation. Inflation in an economy can be the result of an increase in aggregate demand that is not accompanied by an increase in aggregate supply. A rise in any component of aggregate demand can bring about demand-pull inflation. Inflation can also result from a decrease in aggregate supply that occurs when businesses find that production inputs prices have risen. Such occurs when labour cost and the price of raw materials have risen. Money supply is the total money stock in the economy. It is an important macro-economic tool for stabilizing the economy when there is recession (Ullah, & Rauf, 2013).

Iwedi, (2016) asserted that Macroeconomic stability is the fundamental basis of sustainable economic development, because, it increases national saving and private investment and also improves exports and balance of payments with improving competitiveness. A macroeconomic stability, therefore, to a large extent, guarantees economic wellbeing of the people. To this end, there are several factors identified as potential determinants of macroeconomic stability such as low inflation, low deficit, stability of real exchange rate and exchange relationship. These aforesaid factors are serious drivers of economic growth. Iwedi empirically examined the development-effects of macroeconomic stability factors in Nigeria. Using time series data for the period 1980 to 2011 and adopting various econometric techniques such as Granger causality test, and Error Correction Mechanism (ECM), the results reveal that real interest rate has direct and significant effects on Nigeria's economic development while external debt and real exchange rate impact negatively on development in the country. The study concluded that for macroeconomic stability

to be achieved in Nigeria, each of the factors should be examined individually such that its respective effect on development could be identified while appropriate macroeconomic policy would be formulated and implemented where required.

The basic objective of government; be it democratic or military, is to promote sustainability in all ramifications of her society. In doing this, different governments choose different institutional arrangements for economic management. The regulated approach, the deregulated approach or the coordination of both could be chosen. Whichever one is pursued largely depends on the socio-politico-economic and international politics of the time. Therefore, policy instruments are required for government to redirect the system for stability. To achieve this, macroeconomic policies are used. Thus, macroeconomic policies affect the performance of the economy.

Economic Growth

Economic growth can be defined as an increase in the capacity of a country or an economy to produce goods and services compared from one period of time to another. Although the growth of an economy is thought of not only as an increase in productive capacity but also as an improvement in the quality of life of the people of that economy (Investopedia, 2016). Economic growth has two meanings. The most common definition is increase in the output that an economy produces over a period of time, the minimum being two consecutive quarters. Another is an increase in an economy's production using all scarce resources available to it.

Economic growth is defined by Antwi, Mills, and Zhao, (2013), as the process that brings about increase in the real per capita income of a country over a long period of time. Also, Barro, and Martin, (1992), defined economic growth as a steady process by which the productive capacity of the economy is increased over time to bring about rising levels of national output and income. Sabir, and Tahir, (2012), defined Economic Growth as the increasing capacity of the economy to satisfy the wants of goods and services of the members of society. This means that where there is economic growth, factors of production increasing and aimed at increase the production of goods and services for the satisfaction of human wants. Economic growth is measured by the amounts of goods and services produced in a country. That is why Sabir, and Tahir, (2012) referred to it as the increase of per capita gross domestic product (GDP) or other measures of aggregate income typically reported as the annual rate of change in real GDP. Thus the GDP can be used as a good measure for economic growth and development of the country.

Economic growth includes changes in material production and during a relative short period of time, usually one year. In economic theory, the concept of economic growth implies an annual increase of material production expressed in value, the rate of growth of GDP or national income (Gatawa et al., 2017). Growth can be achieved, but it does not achieve the developmental course of the economy. So economic development involve not only an increase in material production, but also all the other socio-economic processes and changes caused by the influence of economic and beyond economic factors (Yifu Lin, 2014).

According to Aigbokhan (1995), Economic growth means an increase in the average rate of output produce per person usually measured on a per annum basic. It is also the rate of change in national output or income in a given period. Economic growth is the increase in gross domestic product (GDP) or other measure of aggregate income. It is often measured as the rate of change in real GDP. Economic growth refers only to the quantity of goods and services produced. Edoumiekumo and Opukri (2013) define economic growth as an increase in real gross domestic product (GDP). That is, gross domestic product adjusted for inflation. The growth can either be positive or negative. Negative growth can be referred to by saying that the economy is shrinking. This is characterized with economic recession and economic depression. Ullah and Rauf (2013) noted that whenever there is increase in real GDP of a country it will boost up the overall output and we called it economic growth. The economic growth is helpful to increase the incomes of the society, help the nation to bring the unemployment at low level and also helpful in the deliveries of public services.

The Neo Classical growth models of Solow (1956) believed that, in the long run the technological progress and population growth are the main determinant of economic growth. They are of the view that government can influence the population growth rate, saving rate and incentive to invest in human and

physical investment through its different policies such as fiscal, monetary, income and exchange rate policies. These policies can change the equilibrium factor ratio or affect the transition path of steady state growth rate. While endogenous growth model by Barro (1990), believed that physical and human capital do affect economic growth but fiscal policy variables like distortionary taxation and productive expenditure affect the output level and its steady growth rate. According to Neo Classical growth model, impact of fiscal policy on steady economic growth is temporary and not the permanent one.

The concept of economic growth is viewed as an increase in the net national product in a given period of time (Dewan, & Hussein 2001). He explained that economic growth is generally referred to as a quantitative change in economic variables, normally persisting over successive periods. Todaro and Smith (2006) defined economic growth as a steady process by which the productive capacity of the economy is increased over time to bring about rising levels of national output and income. Kolawole, (2013), viewed economic growth as an increase in output. He explained further that it is related to a quantitative sustained increase in the country's per capita income or output accompanied by expansion in its labour force, consumption, capital and volume of trade.

Theoretical Framework

A good number of theories have been reviewed on the effects of selected macroeconomic variables on Nigerian economy. The framework for understanding growth over the long-term is rooted in various theories that relate to possible resources growth. For the purpose of this study, the theories reviewed are; the Growth Theory, the Endogenous Growth Theory, Optimal Currency Area (OCA) Theory, The Purchasing Power Parity (PPP) Theory and The Interest Rate Parity Theory. Growth theory is concerned with the theoretical modelling of the interactions among growth of factor supplies, savings and capital formation, while growth accounting addresses the qualification of the contributions of the different determinants of growth.

The Solow's Model

This study is anchored on Solow's Theory. Robert Solow and Swan introduced the Solow's model in 1956. Their model is also known as Solow-Swan model or simply Solows model. In Solow's model, other things being equal, states that saving, investment and population growth rates are important determinants of economic development. Higher saving, investment rates, lead to accumulation of more capital per worker and hence more output per worker. On the other hand, high population growth has a negative effect on economic development simply because a higher fraction of saving in economies with high population growth has to go to keep the capital-labour ratio constant. In the absence of technological change and innovation, an increase in capital per worker would not be matched by a proportional increase in output per worker because of diminishing returns. Hence capital deepening would lower the rate of return on capital.

Solow's neoclassical growth model is an extension of the theory of Cobb Douglas, explaining that the output or gross domestic product (GDP) depends on the technology, number of employees, amount of physical capital, the amount of human capital, as well as the amount of natural resources. So it can be written by the following equation.

$$Y = A f (L, K, H, N)$$

where f is the function that shows how the inputs are combined to produce output. *A* is a variable that indicates the availability of production technology. *L* is the amount of labor. *K* is the amount of physical capital. *H* is the amount of human capital, and *N* is the number of natural resources.

The first factor that determines the output of a country is labor. Economists argue that population growth will affect life in society. The most impact is the change in the total labor force. Large population will have a large labor force in producing goods and services. In addition, economists believe that growth is the engine of the world's population in technological progress and economic prosperity

The second factor is the physical capital. Physical capital is the completeness of the equipment and structures used to produce goods and services. Investment is one form of physical capital in the

production function. Both domestic and foreign investment holds the contribution in accelerating the economic growth of a country.

Human capital is the third factor in the neoclassical growth model. Human capital acquired knowledge and skills of workers through education, training, and experience. Quality human capital will enhance the ability of a country to produce goods and services.

The fourth factor is the natural resources. Natural resources are inputs in the production activities provided by nature, such as land, rivers and mineral content in the earth. Many countries have good natural resources, bringing the country towards economic development.

The fifth factor that determines the output of a country is the mastery of science and technology. Technological knowledge is an understanding of the best ways to produce goods and services. When there is a technological development, it will need less labor. So most of the workforce will be able to produce other goods and services, the result will be increased productivity.

Empirical Review

Vorlak et al. (2019) assesses the impact of exchange rates on the economic growth of Cambodia's. The study used variables such as gross domestic product (GDP) indicating Cambodia's economic growth, as well as some explanatory variables such as exchange rate (EXR), broad money (M2), and openness to trade (TOP), rate of inflation (IFR) and foreign direct investment (FDI). The study used an ordinary least squares (OLS) regression model to estimate the effects of exchange rates on Cambodia's economic growth. The research data was downloaded from the World Bank database. According to estimates, the results show that the impact of exchange rate (EXR) and openness to trade (TOP) on GDP is 1%. Exchange rate is positively correlated with GDP, while trade openness is negatively correlated with GDP. During the period of study (1995-2017), other variables such as broad money (M2), inflation rate (IFR), and foreign direct investment (FDI) possess not significant effect on Cambodia's GDP.

Ignatius, Agus, and Long (2018) a lesson on the dynamics of inflation, money growth, exchange rate and interest rate in Ghana. The study used the Distributed lag (ARDL) model for experimental analysis, and the study period was from 1998 to 2018. It was found that the exchange rate and inflation rates markedly affect money growth in both the short and long term and in the same direction.

Barguellil, Ben-Salha, and Zmami (2018) examined the impact of exchange rate fluctuations on economic growth. The experimental studies were carried out using observations from 45 emerging and embryonic countries during the period 1985-2015 and this time was evaluated using generalized differences and methods of moments. Their findings show that the measurement of the nominal exchange rate and the volatility of the real exchange rate are based on heterogeneous summaries default conditions which have a negative correlation with economic growth. More to that, the impact of exchange rate variations rest on the exchange rate regime and financial openness, thus, when countries adopt flexible exchange rate regimes and financial openness, volatility is likely to be less destructive.

Agus, Ignatius, and Long (2018) An Evidence Analysis of the Exchange Rate Disconnect Puzzle in Indonesia. The study established a connection between exchange rate and macroeconomic fundamentals. The time of the was study from 1990 to 2017, By using ARDL model, the research established that, in the short- term, Dornbusch- Frankel sticky price model explained better the refusing of the puzzle evidence which provided macroeconomic fundamental that affect exchange rate. Frekel-Bilson, according to the hypothesis was support that in the long-run flexible price model provides a little support in the refusing of the puzzle evidence.

Peter and Isaac (2017) used the yearly statistics from 1984 to 2014 to study the causal connection amid Ghana's real exchange rate and economic growth. Their research literally combines parameters and economies indicators, for instance, government spending, real effective exchange rates, fixed capital formation, real GDP growth, labour force, openness to trade, and foreign direct investment. The descriptive estimations indicated that all the regressors except for foreign direct investment have positive means. The unit root test displays two levels of trend and first difference, approximately most of the regressors were stationary and while some were non-stationary. By using the ARDL co integration estimation technique, the paper established that, the real exchange rate possesses a firm co integration

relationship with economic growth. The long-term estimates of ARDL further indicate that total fixed capital formation, and labour have a positive and significant impact on economic growth, whiles real effective exchange rates, government expenses, real gross domestic product (GDP), openness to trade and foreign direct investment versus economic growth has a substantial adverse impact. Short-term output again shows that foreign direct investment, openness to trade, real effective exchange rate and total fixed capital formation have a robust and significant impact, while other variables have an adverse influence on economic growth.

Kenneth, Jonathan, and Kenneth (2016) investigated exchange rate regime for Nigerian economic growth and its impacts. The study used the generalized moment method (GMM) to guesstimate economic growth from 1970 to 2014. The study found that, the relaxation of the exchange rate system would stimulate Nigeria economic progress throughout 1970-2014 period and the fixed exchange rate system in the unseemly distant future. The estimation output suggested further that, the fixed exchange rate will at some point in time limits the general welfare of the Nigerian economic enhancement because the real exchange rate reflects the opposite correlation of economic progress throughout the age of the fixed exchange rate system.

In a similar study Ismaila (2016), examine exchange rate depreciation and Nigeria economic growth during the SAP and post SAP period. The study covers the period of 1986–2012, using the Johasen co-integration test and error correction model analyses after conducting the stationary test, the results show that broad money supply, net export and total government expenditure have significant impact on real output performance in the long run while exchange rate has direct and insignificant effect on Nigeria economic growth in both short and long run this implies that exchange rate depreciation during the SAP period has no robust effect on Nigeria economic performance. Therefore, the study suggested that policy makers should not totally rely on exchange rate depreciation policy instrument to induce economic growth, but should use it to complement other macro-economic policies such as monetary and fiscal policies.

Furthermore, on the relationship between exchange rate and economic growth; Kenneth, Jonathan and Nnadi (2016) examined the relationship between exchange rate regimes and output growth in Nigeria in different periods from 1970 to 2014. The study employs the Generalized Method of Moments (GMM) to estimate economic growth equation as a result of endogennity problem. In contrast with previous findings, ours study strongly suggest that exchange rate regimes indeed matter in terms of real economic performance in Nigeria as the results reveal that deregulated exchange rate regime spur economic growth in Nigeria as against the whole period and fixed exchange rate regime. All in all, the findings suggest that fixed exchange rates constrain the performance of the Nigerian economy as real exchange rate depicts inverse relationship with economic growth during the whole period and period of fixed exchange regime. It is against this background, that we recommend the sustainability of the regime of exchange rate liberalization that has been in operation from 1986.

METHODOLOGY
Research Design
This study adopted *ex-post facto* research design. The data for this study are the Real Gross Domestic Product (RGDP) as a proxy for economic growth, Inflation Rate (INF), Interest Rate (INT), Exchange Rate (EXR), Money Supply (M2), Trade Openness and Foreign Direct Investment (FDI) within the period under review. Clearly, all these constitute secondary data. These data were sourced from the Central Bank of Nigeria (CBN) publications, World Bank and as well as of financials statement particularly the Statistical Bulletin and World Bank database.

Model Specification
For the purpose of this study which is to capture exchange rate, interest rate, inflation rate, trade openness, foreign direct investment and money supply on Nigerian economy.

The model used for this investigation is the adaption and modification of the work of Dada and Oyeranti (2012).

The model is stated thus:
RGDP = f (EXR, ITR, IFR, TRO)
Where:
EXC= Exchange rate
ITR= Interest rate
IFR= Inflation rate
TRD=Trade openness
FDR=Foreign direct investment
M_2=Money supply
The model is modified by introducing foreign direct investment and money supply as one of the explanatory variables
RGDP = f (EXR, ITR, IFR, TRO, FDI, M_2)
The Econometric Equation Form of the Model is:
$LnRGDP = \beta_0 + \beta_1 LnEXR, + \beta_2 LnITR\beta_3 LnIIFR + \beta_4 LnTRO + \beta_5 LnFDI + LnM_2\mu$- - -- - - - - - - 1
Where:
RGD = f (EXR, ITR, IFR, TRO, FDI, M_2)
Where:
EXC= Exchange rate
ITR= Interest rate
IFR= Inflation rate
TRD=Trade openness
FDR=Foreign direct investment
M_2=Money supply
µ = Stochastic Disturbance (Error Term)
$\beta0$ = Intercept of Relationship in the Model Constant
$\beta1, \beta2, \beta3, \beta4, \beta5$= are the Coefficients of the Independent Variables
Ln = natural log of the variables introduced to smoothen the stochastic effects of the times series
Data Analysis
Descriptive Statistics
These measures the individual characteristics of the variables used in this study. The result of the descriptive statistics is presented in Table 2
Table 1: Descriptive Statistics for Selected Macroeconomic Variables on Nigeria Economy

	RGDP	EXR	ITR	INFR	TO	M2	FDI
Mean	4.707500	111.6199	18.76438	20.53188	66.81906	6787.910	1207.393
Median	4.760000	119.7686	17.96500	13.05000	71.77500	31.43119	748.4200
Maximum	14.60000	358.3100	29.80000	76.80000	97.30000	213182.0	6031.060
Minimum	-1.580000	4.017900	11.78000	0.200000	35.75000	1.269320	367.0000
Std. Dev.	3.778407	96.27300	3.732761	19.16161	13.78870	37663.21	1144.449
Skewness	0.536878	0.831336	1.123119	1.619045	-0.426061	5.387892	2.588050
Kurtosis	2.917860	3.142605	4.479104	4.420286	3.032783	30.03040	10.87548
Jarque-Bera	1.546264	3.713082	9.644442	16.66992	0.969581	1129.013	102.4203
Probability	0.461565	0.156212	0.618049	0.341240	0.715826	0.371035	0.527102
Sum	150.6400	3571.838	600.4600	657.0200	2138.210	217213.1	38636.58
Sum Sq. Dev.	442.5672	287323.2	431.9386	11382.18	5893.979	4.405110	40602647
Observations	**34**	**34**	**34**	**34**	**34**	**34**	**34**

Table 1 shows the descriptive statistics of the variables for the study. It presents the standard deviation, mean maximum and minimum values of the data set obtained from the annual reports. real gross domestic product which is a measure of dependent variables showed a mean of 4.707% with minimum value of 1.580% and maximum values of 14.600% respectively. The standard deviation is 44% indicating high variation in the real gross domestic product in Nigerian economy. This implies that the Nigerian economy is relatively unpredictable and risky. This is capable of discouraging investment in the country. Results of the

descriptive statistics showed that exchange rate had a mean of 111.6% and standard deviation of 287323 with minimum and maximum values of 4.017% and 358%.

Interest rate had a mean of 18.7% with standard deviation of 431 with minimum and maximum values of 11.7 % and 29.8% respectively. Inflation rate had a mean of 20.53% with standard deviation of 1138 with minimum and maximum values of 19.16% and 0.200% respectively.

Trade openness had mean of 66.8% with standard deviation of 589 with minimum and maximum values of 35.750% and 97.300% respectively

Money Supply had a mean of 6787.910% with standard deviation of 4.4 with minimum and maximum values of 1.269% and 2131% respectively

Foreign direct investment had a mean of 1207% with standard deviation of 406 with minimum and maximum values of 367% and 6031% respectively.

Table 2: ADF Test of Stationarity test for Real sector outputs and financial instrument variables

Variables	At Level		First Difference		Order of
	t-Statistic	Prob.	t-Statistic	Prob.	Integration
LnTO	2.2219	0.9999	-6.3692	0.0114	1(1)
LnRGDP	-3.46333	0.0293			1(0)
LnM2	-1.7716	0.0295			1(0)
LnEXR	--2.4538	0.0378			1(0)
LnITR	-3.4265	0.0012			1(0)
LnIFR	-2.123540	0.0372			1(0)
LnFD	-1.988460	0.2902	-6.493611	0.0000	1(1)

Source: Authors computation from Eviews 9.0

The tests of stationarity for the variables were shown on Table 3. The results revealed that LnRGDP, LnM2, LnEXR, LnITR and LnIFR are stationary stationary at level 1(0). while LnTO and LnFDI was stationary in their first differences 1(1). Since the variables have a combined stationarity status of level 1(0) and first difference 1(1), the most suitable tool of analysis is the Autoregressive Distributive Lag technique (ARDL). The variables stationary at level implies that they are not time variant while the ones stationary at first deference suggest that they respond to changes in time periods.

Selected Macroeconomic Variables and Real Gross Domestic Product in Nigeria
ARDL (Bounds) Test for Cointegration
Table 3. Result of the ARDL (Bounds) Test
ARDL Bounds Test
Date: 21/05/22 Time: 13:47
Sample: 1987 2020
Included observations: 34
Null Hypothesis: No long-run relationships exist

Test Statistic	Value	K
F-statistic	2.053753	6

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.12	3.23
5%	2.31	3.47
2.5%	2.75	3.99
1%	3.15	4.43

Source: Eviews 9.0

The bound test is shown in Table 3. The result compared the F-statistics with the critical bound values. The F-statistics is 2.053753. The results showed that the F-statistic is less than the lower bounds at 2.31

and upper bounds at 3.47 of the critical values at   0.05 level of significance. This means that there is no cointegration or long run relationship between selected macroeconomic variables and real gross domestic product in Nigeria

Short Run Relationship

Table 4: Short Run Model of the Relationship Between Selected Macroeconomic Variables and Real Gross Domestic Product in Nigeria

Dependent Variable: LNRGDP
Method: ARDL
Date: 21/05/22   Time: 13:46
Sample (adjusted): 1987 2020
Included observations: 34

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNRGDP(-1))	5.182358	0.187400	3.973094	0.0535
D(LNRGDP(-2))	2.450433	0.138677	3.248080	0.0087
D(LNEXR)	-0.316658	0.005508	1.208845	0.7245
D(LNEXR(-1))	-3.406474	0.026994	0.925677	0.5264
D(LNITR)	-0.131949	0.154604	1.853467	0.6134
D(LNITR(-1))	-2.201633	0.086511	0.330730	0.4120
D(LNIFR)	1.030838	0.033430	3.922466	0.0280
D(LNIFR(-1))	0.065769	0.030623	1.147717	0.7573
D(LNTO)	3.122394	0.026836	4.560757	0.0010
D(LNTO(-1))	6.070733	0.022497	3.144159	0.0104
D(LNFDI)	0.416187	0.007332	3.843775	0.0185
D(LNFDI(-1))	0.042184	0.030662	2.375811	0.0389
D(LNM$_2$)	1.323432	0.152582	3.242524	0.0324
D(LNM$_2$ (-1))	3.471352	0.203568	2.326475	0.0001
D(LNM$_2$ (-2))	2.417227	0.159937	15.11361	0.0221
LNITR(-1)	0.536238	0.216357	2.478484	0.0326
LNIFR(-1)	0.034002	0.023436	1.450813	0.1775
LNTO(-1)	0.064175	0.016467	3.897100	0.0030
LNIFDI(-1)	-0.011243	0.068289	-0.164633	0.8725
LNM$_2$ (-1)	0.063657	0.077943	0.816716	0.4331
LNRGDP(-1)	-0.157393	0.080825	-1.947330	0.0801

R-squared	0.756544	Mean dependent var		0.204073
Adjusted R-squared	0.723979	S.D. dependent var		0.105243
S.E. of regression	0.037361	Akaike info criterion		-3.501677
Sum squared resid	0.013958	Schwarz criterion		-2.567545
Log likelihood	72.52515	Hannan-Quinn criter.		-3.202840
F-statistic	11.58525	Durbin-Watson stat		1.899055
Prob(F-statistic)	0.000183			

Source: Eviews 9.0

The short run effect of selected macroeconomic variables and real gross domestic product in Nigeria is explained in the result in Table4. The analyses are interpreted based on the coefficient of the explanatory

variables, and the coefficient of determination (R^2). The statistical significance was confirmed using the t-statistics for the coefficient of regression, and F-statistics for the coefficient of determination.

Log of Real Gross Domestic Product (LNRGDP): The results showed that the coefficient for log of real gross domestic product (RGDP) at first year is positive at 5.182358 and after one year is 2.450433 with t-Statistic of 3.973094 and 3.248080 with probability value of 0.0535 and 0.0087 showing that real gross domestic product is an endogenous variable in the short run.

Log of Exchange Rate (LNEXR): The coefficient for log of exchange rate (LNEXR) in the first year is negative at -0.316658 and after one year is negative at 3.406474 with t-Statistic of 1.208845 and 1.925677 with probability value of 0.7245 and 0.5264 showing that exchange rate has insignificant effect on real gross domestic product in the short run

Log of Interest Rate (LNITR): The coefficient for log of interest rate (LNITR) in the first year is positive at 0.131949 and after one year is negative at -2.201633 with t-Statistic of 1.853467 and 2.330730 and probability value of 0.6134 and 0.4120 this shows that interest rate has insignificant effect on real gross domestic product in the short run

Log of Inflation Rate (LNIFR): The coefficient for log of inflation rate (LNIFR) in the first year is positive at 1.030838 and after one year is negative at -0.065769 with t-Statistic of 3.922466 and 1.147717 and probability value of 0.0280 and 0.7573 this indicate that inflation rate has no significant effect on real gross domestic product in the short run

Log of Trade Openness (LNTO): The coefficient for log of trade openness in the first year is positive at 3.122394 and after one year is positive at 6.070733 with t-Statistic of 4.560757 and 3.144159 and probability value of 0.0010 and 0.0104 showing that trade openness has significant positive effect on real gross domestic product in the short run

Log of Foreign Direct Investment (LNFDI): The coefficient for log of foreign direct investment in the first year is positive at 0.416187 and after one year is positive at 0.042184 with t-Statistic of 3.843775 and 2.375811 and probability value of 0.0185 and 0.0389; this means that of foreign direct investment has significant positive effect on real gross domestic product in the short run

Log of Money Supply (LNM$_2$): The coefficient for log of money supply in the first year is positive at 1.323432 and after one year 3.471352 with t-Statistic of 3.242524 and 2.326475 with probability value of 0.0324 and 0.0001 this means that money supply has positive and significant effect on real gross domestic product in the short run.

The coefficient of determination (R^2) is 0.723979 and Prob (F-statistics) of 0.000183 indicates that 72% of variations in the dependent variable is accounted for by joint effect of the explanatory variables and that selected macroeconomic variables had significant effect on Nigeria economy in the short run.

CONCLUSION
Our findings revealed that log of inflation rate, log of trade openness, log of foreign direct investment and log of money supply has positive and significant effect on real gross domestic product in the short run while log of exchange rate and log of interest rate had insignificant effect on real gross domestic product in the short run

The coefficient of determination (R^2) is 0.723979 and Prob (F-statistics) of 0.000183 indicates that 72% of variations in the dependent variable is accounted for by joint effect of the explanatory variables and that selected macroeconomic variables had significant effect on Nigeria economy in the short run.

The study therefore concludes that selected macroeconomic variables have been effective short run policy instruments that largely influenced the Nigeria in economy

RECOMMENDATIONS
The recommendations of the study are as follows:
1. That regulatory authorities in Nigeria should employ different set of measures to safeguard the value of the domestic currency in order to reduce the level of exchange rate fluctuations and improve Nigeria economy

2. The monetary authorities in Nigeria should reduce interest rate to attract low interest rates that can encourage credit and boost productivity across the sectors which will improve Nigeria economy
3. Concerted effort should be made by policy makers to increase the level of output in Nigeria by improving productivity in order to reduce the prices of goods and services (inflation) so as to enhance economic development in Nigeria.
4. That Central Bank of Nigeria should adopt an expansionary monetary policy that can increase the money supply to the real sectors to boost Nigerian economy
5. A major policy implication of this result is that concerted effort should be made by policy makers to increase the level of output in Nigeria by improving productivity supply in order to reduce the prices of goods and services (inflation) so as to enhance economic development in Nigeria.
   6. Government should increase its spending on agricultural facilities to promote the real sector in Nigeria. There is need to increase allocations towards the development of agricultural sectors.

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