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Macroeconomic Variables, Insecurity And Economic Growth In Nigeria

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ABSTRACT
This study investigated the effect of macroeconomic variables, insecurity on economic growth in Nigeria from 1991 to 2021. The specific objectives of the study were to ascertain the effect of interest rate on economic growth in Nigeria; to investigate the effect of exchange rate on economic growth in Nigeria; to examine the effect of inflation rate on economic growth in Nigeria; and to determine the effect of insecurity on economic growth in Nigeria. The study was anchored on Solow's Theory. *Ex post facto* research design was employed. The data used in this study were sourced from Central Bank of Nigeria Statistical Bulletin, 2021. Descriptive statistics, Augmented Dicky-Fuller (ADF), unit root test, conintegration test, correlation analysis and Error Correction Model were employed in analyzing the data. The study found that interest rate has insignificant positive effect on economic growth in Nigeria. The study also found that exchange rate has significant positive effect on economic growth in Nigeria. The study further found that inflation rate has significant negative effect on economic growth in Nigeria. Insecurity was found to have significant effect on economic growth in Nigeria. The study concludes that macroeconomic variables and insecurity have significant effect on economic growth in Nigeria within the period under review. The study recommends amongst others that monetary authorities in Nigeria should initiate policies that will help to reduce interest rate so that it can encourage availability credit and boost productivity across the sectors which will improve economic growth in Nigeria since it has significant effect on economic growth.
Keywords: Interest Rate, Exchange Rate, Inflation Rate, Insecurity, Economic Growth

INTRODUCTION

The dynamics of macro-economic variables has attracted substantial attention from scholars. It has also been the prime concern of policy makers since macro-economic variables has repercussions on the economic health of a nation. 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). The occurrence of an economic crisis characterized by rising inflation, interest rates, exchange rates and unemployment level, makes investment activity and productivity level in the economy to decline. The macroeconomic variables covered in this study to estimate economic conditions of the country are inflation, interest rates, exchange rates and insecurity.

Interest rate is a measure of the cost of capital that must be spent on the use of funds from the owners of capital. High interest rates will increase the cost of capital (Tandelilin, 2010). Interest rate varies with time, default risk, inflation rate, and productivity of capital, among others (Chandra 2014). Changes in interest rate encourage substitution between stock market and money market instruments, and speculative

activities. At a time when demand for money is too high and the circulation of money in society is too great, the government can raise interest rates in order to increase money supply and money demand down. Instead the government can lower interest rates to provide support and accelerate growth in the economic and industrial sectors (Mugambi, 2020). So the increase in production becomes higher and can lower the rate of inflation and increase the overall productivity.

Inflation on the other hand is a change in the form of price increases of goods in general and continuous (Nnajieze, Nwabuisi & Igwe, 2021). Inflation is a macro fundamental factor of macroeconomic indicators that illustrates the unhealthy economic conditions due to generally rising prices of goods which result in weakening public purchasing power (Pangemanan, 2013). High inflation will encourage rising raw material prices and increase the operating costs, causing the selling price of goods to increase and decrease people's purchasing power, while the income of the community remains (Gatuhi, Gekara & Muturi, 2015).

Exchange rate is the price of a unit of a given currency in relation to other currencies. The performance and profitability of industries and companies that are major importers or heavy users of imports are considerably affected by the exchange rate of the Naira against major currencies of the world (Osamwonyi, 2013). The decline in the exchange rate means the decline in the international community's demand for the naira or the increasing demand of foreign currency by the public as a means of international payment (Isil, 2021). The rising exchange rate reflects the performance in the money market increasingly showing improvement.

Insecurity is another factor that can affect economic growth in an economy. Also, Nigeria is presently plagued with heightened security crisis manifesting in the form of internal terrorism such as armed banditry, farmers-herdsmen clashes, kidnapping, local crimes, burglary, and insurgency. The Global Terrorism Index puts Nigeria as the third most terrorized country in the world (Global Terrorism Index, 2020). Unfortunately, while this is resulting in desperate loss of lives in their numbers, it is equally taking a toll on businesses and the country's economy at large. No business can thrive without adequate security. Insecurity has led to the destruction of businesses and properties, equipment, relocation of businesses to other African countries. Many business operators who were residing in the northern part of Nigeria have either closed down or relocated their businesses due to Boko Haram insurgents. The incessant clashes between herdsmen and farmers were some other disasters which affected rural dwellers and their farming businesses. This affects the overall productivity of the economy negatively. Based on the foregoing, the study investigated the effect of macroeconomic variables and insecurity on economic growth in Nigeria.

Statement of Problem

The influence of macroeconomic variables on an economy cannot be over-emphasized The Nigerian economy has remained underdeveloped for a long period despite being richly blessed with huge human and natural resources. This has been attributed to various factors such as corruption, high interest rate, high exchange rate, unemployment, inflation e.t.c. High exchange rate and inflation are two twin evils that have eaten deep into the fabric of the Nigerian economy over the years. In other hand, the importance of interest rate as a policy instrument lies in the fact that it can be used judiciously to foster meaningful economic growth. This is due to the effect it has on savings, investment, output growth, employment, money supply and balance of payment. As a return for financial assets, interest rate serves as incentives to savers, and by extension influences availability of savings. Over time, Nigeria government has continued to manipulate these macroeconomic variables with the intent to push the frontier of economic growth and development, but unfortunately the growth rate has been unimpressive. Also, the high level of insecurity been witnessed in various part of the country has affected the level of productivity in the economy.

Furthermore, economic growth is often gauged by the stability in the macroeconomic variables, such as exchange rate and inflation rate, the CPI, level of government expenditure, interest rates, among others. However, macroeconomic volatility is much higher in developing countries than developed ones (Owolabi, 2017). For instance, the Nigerian economy has shown volatility in exchange rate, inflation, interest rate, among several others (Agu, Idike, Okwor & Ugwunta, 2014; Ogbole, Amadi, & Essi, 2011). Analysts opine that growth in the real sector is hindered negatively from high lending rates and

inflationary pressures, which invariably is responsible for high cost of production (Rasheed, 2010). In Nigeria, major macroeconomic indicators have shown significant fluctuations over time, more especially as the country emerges from recession. For instance, inflation rate as measured by the CPI is presently at double-digit level while the exchange rate keeps on increasing at an astronomical rate and this might affect the performance of a firm. Previous studies on macroeconomic variables did not factor in the issue of insecurity in examining its effect of economic growth. The current study improved on the previous by extending the number of years studied and making use of robust economic metric techniques not used in previous studies. Based on the foregoing, the study examined the effect of macroeconomic variables and insecurity on economic growth in Nigeria.

Research Questions

The following research questions guided this study.

1. What is the degree of effect of interest rate on economic growth in Nigeria?
2. To what degree does exchange rate affect economic growth in Nigeria?
3. What is the level of the effect of inflation rate on economic growth in Nigeria?
4. To what extent does insecurity affect economic growth in Nigeria?

Research Hypotheses

The following tentative statements stated in null form guided this study.

1. Interest rate has no significant effect on economic growth in Nigeria.
2. Exchange rate has no significant effect on economic growth in Nigeria.
3. Inflation rate has no significant effect on economic growth in Nigeria.
4. Security expenditure has no significant effect on economic growth in Nigeria.

REVIEW OF RELATED LITERATURE

Macroeconomic Variables

Macroeconomics is concerned with the behavior of the overall or whole economy inter alia with huge population, economy's total output, price levels, government budget and expenditure, the rate of inflation, employment/unemployment and exchange rates (Mohamad, 2020). It forms one of the external environments which firms have no control over, therefore they have to adjust to fit in it. Macroeconomic variables are variables that control the whole economy. These variables include interest rates, economic output, employment and unemployment, huge population, inflation, government budget, GDP growth, international trade balances, and productivity (Muchiri, 2012). Macroeconomic variables are simulated with aggregate indicators usually affecting the overall economic environment in which organizations operate (Mappadang, 2021). But this study covered four main macroeconomic variables i.e., exchange rate, interest rate and inflation rate.

Interest Rate: Interest rate is the cost of credit in an economy. Crowley cited in Egbunike and Okerekeoti (2018) defined interest rate as the price a borrower pays for the use of money they borrow from a lender or fee paid on borrowed assets. Interest rate is a price of money that reflects market information regarding expected change in the purchasing power of money or future inflation (Shamsuddeen, Rosni & Mohd, 2020). Interest rate is the price that a borrower pays for the money that they have borrowed or the fee the borrower pays to the lender for the money borrowed or the use of an asset (Ali & Siddiqui, 2021). Agbarakwe (2017) argue that interest rate is the price of capital allocation over time; monetarist use the interest rate as an important tool to attract more saving, as increases in the interest rates attract more savings and the decrease in interest rate will encourage investors to look for another investment that will generate more return accordingly. That interest rates are important because they control the flow of money in the economy. High interest rates curb inflation but also slow down the economy. Low interest rates stimulate the economy, but could lead to inflation.

Exchange Rate: Exchange rate is the price of a nation's currency in terms of another currency. It is included in the model because it is a macroeconomic indicator and it is also a monetary aggregate in the open economy. Osiegbu and Onuorah (2012) posit that exchange rate plays a key role in international economic transactions because no nation can remain in isolation due to varying factor endowment.

Movements in the exchange rate have ripple effects on other economic variables such as interest rate, inflation rate, import, export, output, etc. These facts underscore the importance of exchange rate to the economic well-being of every country that opens its doors to international trade in goods and services (Jabaru & Jimoh, 2021). The importance of exchange rate derives from the fact that it connects the price systems of two different countries making it possible for international trade to make direct comparison of traded goods. In other words, it links domestic prices with international prices. Through its effects on the volume of imports and exports, exchange rate exerts a powerful influence on a country's balance of payments position (Aghaulor, 2020).

Inflation Rate: Inflation is the decline of purchasing power of a given currency over time. A quantitative estimate of the rate at which the decline in purchasing power occurs can be reflected in the increase of an average price level of a basket of selected goods and services in an economy over some period of time (Isnurhadi, Taufik & Herwanto, 2021). The rise in the general level of prices, often expressed as a percentage, means that a unit of currency effectively buys less than it did in prior periods. Inflation has been defined over a long period depending on the situation. The changes in prices of goods and services directly and significantly affect the purchasing power of money as well as the cost of production in the manufacture of the same goods and services. The effects of inflation can be seen from two angles; the effect on the aggregate demand and on the cost of production (Ali & Siddiqui, 2021). When the inflation rate is high, consumers who have fixed incomes have a lower purchasing power as the value of money is reduced. This will ultimately lead reduced demand for goods and services. On the other hand, inflation pushes up the cost of production hence affecting the bottom line of firms.

Insecurity

Insecurity portrays the absence of security. Ehi (2009) would term insecurity as "the antithesis of security." They further acknowledged that due to the many ways insecurity affects human life and existence, the concept of security challenges has been variously interpreted. There are some common descriptors used to define security challenges, they include: want of safety; danger; hazard; uncertainty; want of confidence; doubtful; inadequately guarded or protected; lacking stability; troubled; lack of protection; and unsafe, to mention but a few. Omotoye (2013) would describe insecurity as "the state of fear and anxiety stemming from a concrete or alleged lack of protection." This description notwithstanding, Ott and Ukpere (2012) gave a working description of insecurity that was adopted by this study, as: "not knowing, a lack of control, and inability to take defensive action against forces that portend harm or danger to an individual or group, or what make them vulnerable."This insecurity nurtures the phenomenon of terrorism. Little wonder, Oladayo (2014) purported that insecurity and terrorism are two inseparable phenomena. They argued that domestic terror and other social vices are perpetrated in the absence of strong security structure.

Economic Growth

Economic growth is the increase in the amount of the goods and services produced by economy overtime that is an increase in the capacity of an economy to produce goods and services, compared from one period of time to another (Lawal, Nwanji, Asaleye & Ahmed, 2016). It is measured as a percentage of gross domestic products GDP of a country. Economic growth is regarded as a major goal of national policy in any given economy. Economic growth is the rise in the total output (goods or services) produced by a country (Abbas, 2005). It is an increase in the capacity of an economy to produce goods and services, compared from one period of time to another. Economic growth occurs whenever people take resources and rearrange them in ways that are more valuable. Economic growth refers only to the quantity of goods and services produced; it says nothing about the way in which they are produced.

Theoretical Framework

This study was 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 Solow model. In Solow's model, other things being equal, 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 neoclassical growth model is an extension of the theory of Cobb Douglass, 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 of Solow. Human capital include: 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 deciding factor is the fourth 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

The existing empirical studies were reviewed in this section to bring out the gap in literature. Obidike and Nduka (2022) investigated the effect of selected macroeconomic variables on the Nigeria economy from 1987 to 2020. The study adopted ex post facto research design. Exchange rate, interest rate, inflation rate, trade openness, foreign direct investment and money supply were employed the independent variables while real gross domestic product was employed as the dependent variable. Descriptive statistics, Augmented Dickey Fuller test, and Autoregressive Distributive Lag (ARDL) were employed in analyzing the data. The 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.

Agbarakwe (2017) examined the impact of macroeconomic factors on economic growth of Nigeria using Vector Error Correction Model (VECM) Approach for the period 1980 to 2016. Inflation rate, unemployment rate and interest rate were employed as the explanatory variables while real gross domestic product was employed as the dependent variable. The result obtained indicates that there is a long run significant but negative relationship between gross domestic product and inflation. The study further reveal that the speed of adjustment from short run to long run is slow, specifically, it takes about 41 percent speed to adjust from previous year to a current year.

Jabaru and Jimoh (2021) examined the effect of selected macroeconomic variables on the Nigeria economy from 1980 to 2017. Gross domestic product was employed as the dependent variable while

unemployment rate, inflation rate, exchange rate, foreign direct investment, population growth rate, age dependency ratio and crude oil exports were employed as the independent variable. Descriptive statistics and correlation analysis were employed in analyzing the data. The study found that exchange rate and population growth rate significantly affects the Nigeria economy while Unemployment rate, exchange rate, foreign direct investment and crude oil exports were found to be collinear.

Aghaulor (2020) carried out a study on the growth impact of insecurity on the Nigerian economy for the period 1981 to 2017. Gross Domestic Product was employed as the dependent variable while terrorism risk index, discomfort index (addition of unemployment and inflation rates), adult literacy rate and corruption perception index were employed as the explanatory variables. The methods of data analysis employed include ordinary least squares (OLS) method, Augmented Dickey-Fuller (ADF) unit Root Test, Johansen Co-integration test and Error Correction Model (ECM). Result indicated that discomfort index (DCI) had an inverse relationship with GDP in the long run, while terrorism risk index, Adult Literacy rate and Corruption Perception Index have a direct relationship with GDP in the long run.

Ajibola (2016) carried out on economic growth amidst insecurity in Nigeria from 1981 to 2014. Real Gross Domestic Product was employed as the dependent variable while total expenditure on security, gross fixed capital formation, total labour force, corruption perception index and poverty index were employed as the explanatory variables. Multiple regressions [OLS] was employed in analyzing the data. It was found out that 90% systematic variation in Real GDP is caused by variation in total labour force, total expenditure on security, corruption perception index, poverty index, unemployment rate, inflation rate and gross fixed capital formation. The study showed that security and other related variables do not only contribute positively to economic growth in Nigeria, but its impact on economic growth is strong and statistically significant.

Agogbua, Mgbatogu and Nzewi (2022) investigated the impact of insecurity on Nigerian economic growth and development from 2009 t0 2022. The study was designed as ex-post factor research. Gross Domestic product (GDP) and Per Capita Income (PCI) were employed as the dependent variables while insecurity from defence budget and foreign direct investment. Regression and pairwise t-test were employed in analyzing the data. The study found that insecurity hampers business activities but does not have significant influence on economic growth and economic development of Nigeria. The study concluded that national insecurity must be of high consideration as business activities blossom in a secure environment, which ultimately ensures sustainable economic growth and development.

Gap in Literature

From several research conducted earlier it should be noted that economic growth of different countries are influenced by the same macroeconomic variables and insecurity at varies degrees. Furthermore, the economy of some countries could be positively affected, some could be negatively affected by the same variable. Accordingly, the same country may be affected positively by one variable while simultaneously be affected by a different variable negatively. The effects of the same variable on the economic growth may also vary from country to country. This indicated the uniqueness between various countries. From the review of literature, it can be concluded that several empirical studies were done on the effect of macroeconomic variables on economic growth ignoring the combined effect of macroeconomic variables and insecurity on economic growth.

Most studies on macroeconomic variables concentrated on financial performance (Mohamad, 2020; Egbunike & Okerekeoti, 2018; Otambo, 2016; Owolabi, 2017; Ubesie & Ezeagu, 2014), retained earnings (Iheduru & Okoro, 2018), retention ratio (Akani & Sweneme, 2017), profitability (Osamwonyi & Michael, 2014), value creation (Fatai, Taiwo & Adewale, 2015), firms' shares returns (Ogunmuyiwa, 2017), stock market performance (Nijam, Ismail & Musthafa, 2015), and stock returns (Amtiran, Indiastuti, Nidar & Masyita, 2017; Gatuhi, Gekara & Muturi, 2015; Mugambi & Okech 2016; Subing, Kusumah & Gusni, 2017), economic growth (Obidike & Nduka 2022; Agbarakwe 2017; Jabaru & Jimoh 2021) with no recent studies considering the combined effect of macroeconomic variables and insecurity on economic growth. The current study improved on the previous by extending the number of years

studied and making use of more robust estimation technique. Based on the foregoing, the study examined the effect of macroeconomic variables and insecurity on economic growth in Nigeria.

METHODS

The study adopted ex-post facto research design. The data for this study was based on secondary data. The data were generated from Central Bank of Nigeria statistical bulletins. The data is made up of Real Gross Domestic Product (RGDP at current basic price) from Nigeria from 1991 to 2021, interest rate, inflation rate, exchange rate and insecurity proxied by expenditure on security. The secondary data were collected and analyzed using descriptive statistics, correlation and ECM (Error Correction Mechanism). The specification of the model for this work was based on the objective of the study.

The model is stated as follows:

$RGDP = f(INT, INF, EXCH, SE)$

Where

REGDP = Real Gross Domestic Product
INT = Interest Rate
INF = Inflation Rate
EXCH = Exchange Rate
SE = Insecurity

From functional form, the econometric form is stated thus:

$$RGDP = \beta o + \beta_1 INT + \beta_2 INF + \beta_3 EXCH + \beta_4 SE + \mu \quad (1)$$

Where

βo = Autonomous or intercept
β_1 = Coefficient of Parameter of Interest Rate
β_2= Coefficient of Parameter of Inflation Rate
β_3 = Coefficient of Parameter of Exchange Rate
B_4 = Coefficient of Parameter of Insecurity
μ = Stochastic disturbances or error term

The econometric equation can be restated in log form as:

$$LRGDP = \beta o + \beta_1 LINT + \beta_2 LINF + \beta_3 LEXCH + \beta_4 LSE + \mu \quad (2)$$

Where

LRGDP = Log of Real Gross Domestic Product
LINT = Log of Interest Rate
LINF= Log of Inflation Rate
LEXCH = Log of Exchange Rate
LSE = Log of Insecurity
α = Constant Term
β= Beta coefficients

PRESENTATION OF RESULTS

Descriptive Statistics

Descriptive statistics measure the individual characteristics of the variables used in this study. It shows the mean, median, standard deviation, Jarque-Bera and its probability value (Used to measures normality of the data). The result of the descriptive statistics is presented in the table below.

Table 1 Descriptive Statistics

	RGDP	INT	INF	EXCH	SE
Mean	45263.90	18.75367	18.79367	153.3200	213.7410
Median	42044.78	17.77000	12.69500	132.6150	149.6450
Maximum	86751.61	36.09000	72.81000	403.5800	761.6500
Minimum	21660.49	12.32000	5.380000	17.30000	4.100000
Std. Dev.	20227.98	4.669361	16.71887	114.3872	220.0552
Skewness	0.279836	2.116835	2.059743	0.835798	0.984647
Kurtosis	1.684665	8.265531	6.136341	2.835449	3.001862
Jarque-Bera	2.554174	57.06223	33.50851	3.526640	4.847650
Probability	0.278848	0.261874	0.384634	0.171475	0.188582
Sum	1357917.	562.6100	563.8100	4599.600	6412.230
Sum Sq. Dev.	1.19E+10	632.2851	8106.100	379448.4	1404305.
Observations	31	31	31	31	31

Table 1 above reveals the individual characteristics of the variables used in this study highlighting their mean, maximum and minimum values, standard deviation and Jarque-Bera statistics (normality Test). The descriptive results in Table 4.1 above showed that the data of the study covered 31 observations for all the variables, that is, a timeframe of 31 years from 1991 to 2021. Real gross domestic product (RGDP) has a mean value of 45263.90 with maximum value of 86751.61 and minimum value of 21660.49. It also recorded a standard deviation of 20227.98 which is lower than its mean. This shows that real gross domestic product recorded slow growth within the period under review. RGDP also recorded a Jarque-Bera value of 2.554174 with a probability value of 0.278848 which is within the acceptable threshold indicating that RGDP is normally distributed.

Interest rate has a mean value of 18.75367 with maximum value of 36.09000, minimum value of 21660.49 and a standard deviation of 4.669361. It also recorded a Jarque-Bera value of 57.06223 with a probability value of 0.261874 which is within the acceptable threshold indicating that interest rate is normally distributed. Inflation rate has a mean value of 18.79367 with maximum value of 72.81000, minimum value of 5.380000 and a standard deviation of 16.71887. It also recorded a Jarque-Bera value of 33.50851 with a probability value of 0.384634 which is within the acceptable threshold indicating that inflation rate is normally distributed.

Exchange rate has a mean value of 153.3200 with maximum value of 403.5800, minimum value of 17.30000 and a standard deviation of 114.3872. It also recorded a Jarque-Bera value of 3.526640 with a probability value of 0.171475 which is within the acceptable threshold indicating that exchange rate is normally distributed. Insecurity has a mean value of 213.7410 with maximum value of 761.6500, minimum value of 4.100000 and a standard deviation of 220.0552. It also recorded a Jarque-Bera value of 4.847650 with a probability value of 0.188582 which is within the acceptable threshold indicating that insecurity is normally distributed.

Unit Root Test

The first step involves testing the order of integration of the individual variables under consideration. Researchers have developed several procedures for the test of integration, but the most popular of them is the Augmented Dickey Fuller (ADF) test. The result is presented below.

Table 2: Result of the Unit Root Test

Variables	ADF Statistics	Critical Values			Order of Integration	P – Value	Remark
		1%	5%	10%			
LRGDP	-4.512138	-3.689194	-2.971853	-2.625121	1(1)	0.0013	Stationary
LINT	-8.543391	-3.689194	-2.971853	-2.625121	1(1)	0.0000	Stationary
LINF	-4.983002	-3.724070	-2.986225	-2.632604	1(1)	0.0005	Stationary
LEXCH	-3.904227	-3.679322	-2.967767	-2.622989	1(1)	0.0300	Stationary
LSE	-7.092916	-3.724070	-2.986225	-2.632604	1(1)	0.0000	Stationary

From the unit root Table 2 above, it was observed that all the variables are integrated at 1st difference. Since the decision rule is to reject stationarity if ADF statistics is less than 5% critical value, and accept stationarity when ADF statistics is greater than 5% criteria value, the ADF absolute value of each of these variables is greater than the 5% critical value at their first difference but less than 5% critical value in their level form. Therefore, all the variables are all stationary

Cointegration Test

Cointegration means that there is a co-relationship among the variables. Cointegration test is done on the residual of the model. Since the unit root test shows that all the variables are stationary, we go further to carry out the cointegration test. The essence is to show whether the variables have a long term relationship or equilibrium among them. That is, the variables are cointegrated and will not produce a spurious regression.

The result is presented in table 3.

Table 3: Result of Cointegration Test

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.914766	152.9712	69.81889	0.0000
At most 1 *	0.720489	84.02514	47.85613	0.0000
At most 2 *	0.574948	48.33317	29.79707	0.0001
At most 3 *	0.412714	24.37797	15.49471	0.0018
At most 4 *	0.287089	9.475149	3.841466	0.0021

Trace test indicates 5 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.914766	68.94607	33.87687	0.0000
At most 1 *	0.720489	35.69197	27.58434	0.0037
At most 2 *	0.574948	23.95521	21.13162	0.0195
At most 3 *	0.412714	14.90282	14.26460	0.0396
At most 4 *	0.287089	9.475149	3.841466	0.0021

Max-eigenvalue test indicates 5 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

The results contained in Table 3 above show that both the trace test values and the Max-eigen values show 5 co-integrating equations each. Hence, the null hypothesis (H_0) is rejected in favor of the alternative hypotheses. This implies that a long-run equilibrium relationship exists among the variables. As a result, we conclude that there exists a long run relationship between macroeconomic variables, insecurity and economic growth in Nigeria over the study period.

Correlation Analysis

Correlation matrix was employed to check the extent of association between the variables used in the study and to determine if multi-collinearity exists among the explanatory variables. This is because the

presence of multicollinearity in a set of data forces the standard error to go up, and then in reverse, forces the t-statistics to be low. The result is presented in table 4 below.

Table 4 Correlation Matrix for the Model

	RGDP	INT	INF	EXCH	SE
RGDP	1.000000	-0.540217	-0.431612	0.788382	0.742620
INT	-0.540217	1.000000	0.585040	-0.486581	-0.516867
INF	-0.431612	0.585040	1.000000	-0.405811	-0.338402
EXCH	0.788382	-0.486581	-0.405811	1.000000	0.739092
SE	0.742620	-0.516867	-0.338402	0.739092	1.000000

Table 4 above indicates interest rate and inflation rate have strong negative correlation with real gross domestic product while exchange rate and insecurity have very strong positive correlation with real gross domestic product. From the rule of Thumb, if correlation coefficient is greater than 0.8, we conclude that there is multicolinearity but if the coefficient is less than 0.8 there is no multicolinearity. We therefore, conclude that the explanatory variables are not perfectly linearly correlated in model one.

Error Correction Model (ECM)

This section accounted for ECM estimates and the result is briefly discussed below:

Table 5 The Error Correction Model

Dependent Variable: LRGDP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	31044.32	7148.024	4.343063	0.0002
LINT	16.88396	370.2895	0.045597	0.9640
LINF	-165.0645	97.77297	-3.688243	0.0002
LEXCH	13.22035	33.67867	2.392544	0.0006
LSE	89.04264	17.62651	5.051633	0.0000
ECM(-1)	-0.468294	0.232636	-2.012994	0.0455

R-squared	0.603454	Mean dependent var	45263.90
Adjusted R-squared	0.588007	S.D. dependent var	20227.98
S.E. of regression	6769.369	Akaike info criterion	20.62922
Sum squared resid	1.15E+09	Schwarz criterion	20.86275
Log likelihood	-304.4382	Hannan-Quinn criter.	20.70392
F-statistic	58.48614	Durbin-Watson stat	1.615733
Prob(F-statistic)	0.000000		

Using the estimated result of the fitted regression line in Table 5, the following were observed. The result showed that the coefficient of interest rate is 16.88396 with a t-statistics value of 0.045597 and a probability value of 0.9640 which is highly insignificant. This implies that interest rate has an insignificant positive effect on economic growth proxied by real gross domestic product. The result showed that the coefficient of inflation rate is -165.0645 with a t-statistics value of -3.688243 and a probability value of 0.0002 which is highly significant. This implies that inflation rate has a significant negative effect on economic growth proxied by real gross domestic product.

Table 5 also showed that the estimation coefficient of exchange rate is 13.22035 with a t-statistics value of 2.392544 and a probability value of 0.0006 which is statistically significant at 0.05 level. This implies that exchange rate has significant positive effect on economic growth proxied by real gross domestic product. The result also showed that the coefficient of insecurity is 89.04264 with a t-statistics value of 5.051633 and a probability value of 0.0000 which is statistically significant. This implies that insecurity had a significant positive effect on economic growth in Nigeria within the period under review.

From table 5, the coefficient of determination (R^2) is 0.603454 with adjusted R^2 value of 0.588007, which shows that the explanatory power of the variables is high. This implies that only 58.8% of the variations

in economic growth in Nigeria are explained by the variations in interest rate, exchange rate, inflation rate and insecurity. The f-statistics value of 58.48614 with its probability value of 0.000000 which is highly significant indicates that interest rate, exchange rate, inflation rate and insecurity have joint significant effect on economic growth in Nigeria. The Durbin Watson D-Statistic obtained was 1.615733 which indicates that means that there is no autocorrelation in the model. Hence, the model can be used for realistic forecasts.

From the result obtained in table 5, ECM (-1) has negative coefficient value of 0.468294 with a probability value of 0.0455. This suggests that the previous years would be corrected in the following year at an adjustment rate of 10%. Hence, there is convergence of the study variables (real gross domestic product, interest rate, exchange rate, inflation rate and insecurity) to long run relationship equilibrium relationship. On this premise, we conclude that the coefficients are significantly differently from zero signposting that interest rate, exchange rate, inflation rate and insecurity on the overall has high statistical significant effect on economic growth of Nigeria on the short run.

Test of Hypotheses

In this section, the hypotheses formulated earlier in the study were tested for empirical significance and the results are presented below. The t value in the ECM result which measures the individual significance of the variables and the probability values were used.

Test of Hypothesis One

$H0_1$: Interest rate has no significant effect on economic growth in Nigeria.

Based on the t-statistics value of 0.045597 and probability value of 0.9640 in Table 5 which is statistically insignificant, we accept the null hypothesis. This implies that interest rate has no significant effect on economic growth in Nigeria.

Test of Hypothesis Two

Ha_2: Exchange rate has no significant effect on economic growth in Nigeria.

Based on the t-statistics value of 2.392544 and its probability value of 0.0006 in Table 5 which is statistically significant, we reject the null hypothesis. This implies that exchange rate has significant effect on economic growth in Nigeria.

Test of Hypothesis Three

Ho_3: Inflation rate has no significant effect on economic growth in Nigeria.

Based on the t-statistics value of -3.688243 and its probability value of 0.0002 in Table 5 which is statistically significant, we reject the null hypothesis. This implies that inflation rate has significant effect on economic growth in Nigeria.

Test of Hypothesis Four

Ha_4: Insecurity has no significant effect on economic growth in Nigeria.

Based on the t-statistics value of 5.051633 and its probability value of 0.0000 in Table 5 which is statistically significant, we reject the null hypothesis. This implies that insecurity has significant effect on economic growth in Nigeria.

DISCUSSION OF FINDINGS

This study investigated the effect of macroeconomic variables and insecurity on economic growth in Nigeria. The data obtained were subjected to empirical analyses and the following were discovered. The study found that interest rate has no significant effect on economic growth in Nigeria. This agrees with the findings of Obidike and Nduka (2022) that interest rate had insignificant effect on real gross domestic product in the short run. This also agrees with the findings of Agbarakwe (2017) that there is a long run significant relationship between interest rate and real gross domestic product. The study also found that exchange rate has significant effect on economic growth in Nigeria. This agrees with the findings of Jabaru and Jimoh (2021) that exchange rate significantly affects the Nigeria economy. This disagrees with the findings of Obidike and Nduka (2022) that exchange rate had insignificant effect on real gross domestic product.

The study further found that inflation rate has significant effect on economic growth in Nigeria. This agrees with the findings of Obidike and Nduka (2022) that inflation rate has significant effect on real gross domestic product. This also agrees with the findings of Agbarakwe (2017) that there is a long run significant relationship between gross domestic product and inflation. Insecurity proxied by (expenditure on security) was found to have significant effect on economic growth in Nigeria. This agrees with the findings of Ajibola (2016) that insecurity have strong and statistically significant impact on economic growth. This also agrees with the findings of Shavah (2022) that insecurity indices (terrorism risk index and corruption perspective index) have significant effect on Nigeria economic growth. This disagrees with the findings of Agogbua, Mgbatogu and Nzewi (2022) that insecurity does not have significant influence on economic growth and economic development of Nigeria.

CONCLUSION

The study investigated the effect of macroeconomic variables and insecurity on economic growth in Nigeria. The data obtained were subjected to empirical analyses and the following were discovered. The study found that interest rate has no significant effect on economic growth in Nigeria. The study also found that exchange rate has significant effect on economic growth in Nigeria. The study further found that inflation rate has significant effect on economic growth in Nigeria. Insecurity was found to have significant effect on economic growth in Nigeria. Based on the foregoing, the study concludes that macroeconomic variables and insecurity have significant effect on economic growth in Nigeria within the period under review.

The study recommends that the monetary authorities in Nigeria should initiate policies that will help to reduce interest rate so that it can encourage availability credit and boost productivity across the sectors which will improve economic growth in Nigeria. 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 fluctuation and improve economic growth in Nigeria. 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 growth and development in Nigeria.

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