Impact of Economic Recession on Nigeria's Macro Economics Performance (1991 to 2022)

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Abstract

This paper seeks to examine and analyzed the main reasons for the emergence of the current economic recession in Nigeria. The variables used for the study include unemployment, inflation and Gross Domestic Product. The methodology of the paper includes Augmented Dickey Fuller test (ADF) test, Johansen cointegration test and VAR model with time series data from 1991-2022. The data was sources from Central Bank of Nigeria. The finding of the study indicates that a unit change in unemployment lagged by one year led to a 66% increase in Gross domestic product, also a unit increase in inflation lag by one year led to a 6% increase in unemployment. At the same time, a percentage increase in GDP led to a 92 percent increase in employment. From the pairwise granger causality tests, the results reveal that economic recession captured by GDP granger causes both unemployment rate and inflation rate within the period of 1991 and 2022. This means that economic recession has significant influence on unemployment, GDP and inflation. The paper recommends among other, effective government intervention through an effective synchronization between measures of fiscal and monetary policy in the direction of increasing liquidity in the economy, decreasing interest rates, increasing investment and employment, increasing the income of economic entities and finally, in the direction of increasing aggregate demand as an exit from the phase of recession.

Keywords: *Economic recession, Impact, Macroeconomics, Performance*

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Background to the Study

Undoubtedly, part of the macroeconomic goals which the government strives to achieve is the maintenance of stable domestic price level and full-employment. Macroeconomic performance is judged by three broad measures- unemployment rate, inflation rate, and the growth rate of output (Ugwuanyi, 2004). Since the advent of economic recession in Nigeria, the economy continues to break records on the downside. Inflation was at 18.63 percent being the highest in 11 years. Foreign reserves currently at N24.5Bn are their lowest in 11 years at which time the country's GDP stood at US$112Bn, less than a quarter of where it stands today. The naira continues to hit new lows against international currencies, the National Bureau of Statistics has stated that Q2 capital importation of $647.1 million fell by 76 percent relative to the second quarter of 2015 and is the lowest level on record and finally it is predicted that Nigeria's economy may shrink by 1.7 percent in 2017 which would mark a full year in recession last seen 25 years ago. The government continues to grapple with rising inflation coupled with slow to negative growth and is in a quandary as to whether to tighten monetary supply to reduce inflation or to increase liquidity to induce growth and create jobs. Against the wishes of the Finance Ministry, the Central Bank during its last policy meeting voted against further easing and maintained interest rates at 14 percent choosing to focus on tackling inflation and retaining interest rates at the current level in order to attract foreign investment into the country via the higher yields on offer.

During economic recession, economic activities slow down, resulting to low level of money in circulation and low earnings by households. This ultimately led the low-income households to starts looking for alternatives sources of income to support their families towards improving their living standard (Nwuzor, 2016). The direct impact of the economic recession on Nigerian's economy has thus far been enormous as most commercial banks in the country refrained from investing in the Nigeria stock market and business ventures. This is why most commentators argue that Africa is so far insulated from the direct effects of the financial crisis. The current economic recession affects Nigeria macroeconomic performance in two possible ways; First, there could be financial contagion and spill overs for stock markets in Nigeria. Stock markets in the region showed some volatility, driven by a sell-off by foreign investors. The Nigerian stock market for instance has been experiencing a continuous downward trend in prices of stocks for over two months now.

Concept of Recession

A recession is when the economy declines significantly for at least six months. That means there's a drop in the following five economic indicators: real GDP, income, employment, manufacturing, and retail sales. People often say a recession is when the GDP growth rate is negative for two consecutive quarters or more. But a recession can quietly begin before the quarterly Gross Domestic Product reports are out. (Kimberly Amadeo2017). Noko (2016) noted that the first sign of a recession is when there are several quarters of slowing but still positive growth. Often a quarter of negative growth will occur, followed by positive growth for several quarters, and then another quarter of

negative growth. For instance, Nigeria fourth quarter for 2016 is 0.8% growth rate this is still an indication of recession. The country cannot say it have conquered recession because of the positive value.

Concept of Macroeconomic Performance
Macroeconomic performance refers to an assessment of how well a country is doing in reaching key objectives of government policy. The main aim of policy is usually an improvement in the real standard of living for their population. The term 'real' means that we have considered the effects of rising prices so that we get a better picture of how many goods and services we can afford to buy and consume (Geoff Riley FRSA 2017).

Theoretical Framework
Classical and Keynesian Approach
The classical theory was the main body of economic theory (Say's Law and the Quantity Theory of Money) accepted by Economists from the 18th Century until 1936 when Keynes published his book, the General Theory of Employment, Interest and Money. In the Classical theory, market forces operated in the system such as to maintain full employment and productive resources and consequently keep the aggregate output at the level producible under conditions of full employment. The factors which determine the productive capacity of an economy are the quantity and quality of available resources in the economy, skill and efficiency (technology) with which these resources are combined. However, Keynes disagrees with the Classical on the concept of self-regulatory equilibrium. The focal points of the Keynesian theory are increasing aggregate demand, money supply, planned spending, interest rates regulation, devaluation, increasing government spending stimulus/injection. Deficiencies in effective demand cause unemployment, inflation and economic recession. Unemployment is not just a short-run voluntary issue as claimed by the classical theory, but a problem caused by ineffective demand and bad economic planning. This theory is relevance to this research work in the sense that, it describes the economy in the long run-where resources are fully employed and everyone is working. It helps to describes what happens during expansions and recessions, in the long run, when the economy is above or below its potential. Many governments use portions of the theory to smooth out the boom and bust cycles of the economies.

Empirical Literature
Revoredo-Giha, Leat, & Renwick (2020) studied the relationship between economic recession, output and unemployment in Scotland. Their study was influenced by a decline in Scottish labour market conditions. The finding of their study shows that the differences in the composition of the economy of rural and urban areas lead to a strong relationship between economic recession, growth and employment in urban areas.

Qazi (2021) got negative relationship between economic recession, unemployment and economic growth of Pakistan. The result confirmed with Okun law. Okun's law states that if unemployment moves above from normal point by one percent, GDP growth falls

by two percent and vice-versa which leads to recession in the economy. It is estimated that economic recession, real GDP and unemployment has direct relationship. The range of the study covers 1980 to 2008. Econometric models were used to ascertain the relationship between recession unemployment and economic growth.

Rigas et al (2021) examined whether the Okun's law continues to be valid in today's economic environment. Their study uses data with regard to the unemployment and economic recession of three countries, Greece, France, and Spain. From the findings the study concludes that the reaction of GDP to change in unemployment and, more generally to Okun's coefficient differ substantially among three counties. Furthermore, based on the causality findings, a two-way causal relation between unemployment and economic recession does not exist for any of the three countries.

Kreishan (2019) used annual data covering the period 2020 to 2022, to ascertain the relationship between economic recession, unemployment and economic growth of Jordan. The empirical results revealed that Okun's law have not been confirmed for Jordan, Thus, it can be suggested that lack of economic growth does explain the economic recession problem of Jordan. Therefore, economic policies related to demand management would not have an important effect in reducing unemployment rate. Accordingly, implementation of economic policies oriented to structural change and reform in labour market would be more appropriate by policy makers in Jordan. The result of this study is in line with other studies in Arab countries.

Noor and Ghani (2022) engaged in a study to examine the relationship between economic recession, output and unemployment in Malaysia during 2018 to 2021. Their study applied basic econometric analysis of testing stationary using ADF and Phillip-Perron test. The result confirmed that there is a negative relationship between economic recession unemployment and economic growth. The coefficient of the regression result is -1.75 and it is significant at 1% level. It means that a 1% decline in unemployment will increase GDP by 1.75%. Furthermore, they confirmed that there is a two-way causality between recession, unemployment and GDP in Malaysian economy.

Abiodun and Fatai (2020) found positive relationship between economic recession, unemployment and economic growth of Nigeria. The study covers the period 2016 to 2019. Using Engel Granger and Co integration test and Ordinary Least Square (OLS) techniques.

Obadan and Odusola (2018) discovered that unemployment and growth are inversely related to economic recession. They also discovered that growth response to unemployment varied among sectors of the economy. For example, employer in industrial sector use less labour to accomplish high volume of production thereby leading to unemployment and economic recession. From the study reviewed above, it appears that there seems to be more empirical evidence of a negative relationship between economic recession, unemployment and GDP in both developed and emerging economies.

Methodology

Data used for this study were secondary data; they are annual time series data on Unemployment Rate (UMP), Inflation Rate (INF) and Gross Domestic Product (GDP) for the period of 1991 - 2022. All data used for the relationship between unemployment and inflation in Nigeria are sourced from Central Bank (CBN) statistical bulletins, monthly and quarterly publication.

Model Specification

To empirically investigate impact of economic recession on inflation, real GDP and unemployment in Nigeria, Unemployment Rate (UMP) was used as the dependent variable while Inflation Rate (INF) Exchange Rate, and Gross Domestic Product (GDP) are the explanatory variables. The model is specified below;

$$UMP = f(Inf, Gdp)$$

The linear regression equation derived from the functional relationship above is:

$$UMP_t = \beta_0 + \beta_1 INF_t + \beta_2 GDP_t + \mu_t$$

UMP is unemployment, INF denotes inflation, GDP stands for Gross Domestic Project.

Analytical Technique
Unit Root Test

Augmented Dickey-Fuller (ADF) test was employed for unit root test and order of integration test. The general form of (ADF) for the unit root test is estimated in the following equation:

$$\Delta y_t = \alpha_o + \alpha_1 y_t + \square \alpha \Delta y_t + \mu$$

Cointegration Test

The Johansen systems procedure was used to test for the presence of a long run relationship. Variables are said to be co integrated if they are affected by the same long run influence. Johansen and Juselius (1990) can be used to distinguish between the existence of one or more co integrating vectors and also generate the test statistics with exact distributions.

Thus, assuming a vector autoregressive (VAR) model;

$$\square \Delta X = \sum \Gamma i \Delta X + \Omega X + \mu + \varepsilon \ \square \square \square \square$$

Granger Causality Test

The Granger (1969) causality procedure is explained as follows; the question of whether y causes x is to see how much of the current x can be explained by past values of x and then to see whether adding lagged values of y can improve the explanation. For a simple bivariate model, one can test the following equations:

$$X_t = \alpha_0 + \sum \alpha_i Y_t + \sum \beta_j X_t + \mu_t$$

$$Y_t = \alpha_0 + \sum \beta i X_t + \sum \alpha_j Y_t + \varepsilon_t$$

Vector Auto-Regressive Model (VAR)

VAR model was used to capture the linear interdependencies among variables. VAR models generalize the univariate autoregressive model (AR model) by allowing for more than one evolving variable. All variables in a VAR enter the model in the same way: each variable has an equation explaining its evolution based on its own lags and the lags of the other model variables.

Results and Discussion

Unit Root Test Result

In other to test for the presence or absence of unit root in the data used for the empirical analysis, Augmented Dickey-Fuller (ADF) test was employed and the test result is as presented below:

Table 1: Unit Root Test Result

| Variables | Level | | 1st difference | | Order of Integration | Remarks |
	ADF VALUE	5% CV	ADF VALUE	5% CV		
UMP	2.044501	3.552973	5.352077	- 3.557759	I(1)	Stationary
INF	3.048992	3.552973	5.745888	-3.557759	I(1)	Stationary
GDP	2.128327	3.552973	5.279981	-3.557759	I(1)	Stationary

Source: Researcher's Computation using E-views

From the table above, it was discovered that none of the variables was stationary at level as there ADF values (2.044501, 3.048992 and 2.128327) were less than 0.05 critical value (3.552973, 3.552973 and 3.552973), but at first differencing all the variables (UMP, INF, and GDP) became stationary as their ADF values (5.352077, 5.745888, and 5.279981) became greater than their 0.05 critical value (3.557759, 3.557759, and 3.557759). These indicate that all the variables were stationary and integrated of order 1, I(1).

Co integration Test Result

Johansen co integration test for the series UMP, INF and GDP is presented in table two (2) below.

Table 2:
Trend assumption: Linear deterministic trend
Series: UMP INF LGDP
Lags interval (in first differences): 1 to 1
Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.461220	27.67440	29.79707	0.0862
At most 1	0.272954	9.739407	15.49471	0.3013
At most 2	0.016932	0.495223	3.841466	0.4816

Trace test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Source: Researcher's Computation (Using Eviews)

Vector Auto-Regressive Model (VAR)
The Vector Auto-Regressive Model is used in econometrics analysis when the variables have no cointegrating equation, as such the Vector Auto-Regressive Model emanated to show the short run impact.

Table 3:
Vector Auto Regression Estimates
Included observations: 21 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	UMP	INF	LGDP
UMP(-1)	0.668413	-0.061758	0.003939
	(0.12253)	(0.63417)	(0.00846)
	[5.45491]	[-0.09738]	[0.46566]
INF(-1)	0.068222	0.605155	0.004125
	(0.03372)	(0.17454)	(0.00233)
	[2.02294]	[3.46721]	[1.77171]
LGDP(-1)	0.926905	-1.698611	0.993710
	(0.36626)	(1.89556)	(0.02529)
	[2.53071]	[-0.89610]	[39.2971]
C	-1.880076	22.76700	0.136876
	(2.24083)	(11.5972)	(0.15471)
	[-0.83901]	[1.96315]	[0.88473]
R-squared	0.881596	0.451274	0.993264
Adj. R-squared	0.868440	0.390304	0.992516
Sum sq. resids	207.0426	5545.612	0.986900
S.E. equation	2.769160	14.33154	0.191185
F-statistic	67.01118	7.401615	1327.150
Log likelihood	-73.42062	-124.3821	9.444098
Akaike AIC	4.994879	8.282717	-0.351232
Schwarz SC	5.179910	8.467747	-0.166202
Mean dependent	11.16613	20.53123	8.180155
S.D. dependent	7.634607	18.35423	2.209949

Determinant resid covariance (dof adj.)	44.94661	
Determinant resid covariance	29.69636	
Log likelihood	-184.5222	
Akaike information criterion	12.67885	
Schwarz criterion	13.23394	

Source: Researcher's Computation using E-views

From VAR result presented above, the coefficient of UMP (-1) is 0.668413 implying that a unit change in unemployment lagged by one year led to a 66% increase in Gross domestic product. The coefficients of INF (-1) are 0.068222 implying that a unit increase in inflation lag by one year led to a 6% increase in unemployment. At the same time, GDP (-1) has a coefficient of 0.926905meaning that a percentage increase in GDP led to a 92 percent

increase in employment. Also, the computed R^2 value (0.88) of which is the coefficient of multiple determinations indicates that our model satisfies the requirement for goodness of fit. The value shows that 88% of the variations in the unemployment (UMP) are explained by the variation of the explanatory variables namely; inflation rate (INF), and gross domestic product (GDP), while the remaining 12% is explained by variable not included in the model

Table 4: Granger Causality Test Result
Pairwise Granger Causality
Tests Lags: 2

Null Hypothesis:	Obs	F-Statistic		Probability
UMP does not Granger Cause GDP	21	6.64937		0.53429
GDP does not Granger Cause UMP				
INF does not Granger Cause GDP	21	0.46755	0.00504	
GDP does not Granger Cause INF		6.24906	0.03454	
		0.58661	0.00654	
		1.72374	0.19976	
INF does not Granger Cause UMP	21			
UMP does not Granger Cause INF		1.94915		0.16429

Source: Researcher's Computation using E-views

From the pairwise granger causality tests, the results reveal that economic recession captured by GDP granger causes both unemployment rate and inflation rate within the period of 1991 and 2022. This means that economic recession has significant influence on unemployment, GDP and inflation. However, the result further revealed that while inflation granger causes GDP, unemployment did not granger causes GDP. This implies that inflation further help to worsen the economic recession in the country but unemployment did not play any significant role on how far the economic recession lasted in the country within the study period. While GDP and inflation has bidirectional relationship, GDP and unemployment has a unidirectional relationship where GDP is the one causing unemployment in the country.

Discussion of Finding
The result revealed that Okun's law holds in Nigeria. Okun's law means that a one percent increase in the growth rate above the trend rate of growth (or the growth in potential output) would lead only to three percent in the reduction of unemployment. The result of the study indicates that a unit change in unemployment lagged by one year led to a 66% increase in Gross domestic product, also a unit increase in inflation lag by one year led to a 6% increase in unemployment. At the same time, a percentage increase in GDP led to a 92 percent increase in employment. From the pairwise granger causality tests, the results reveal that economic recession captured by GDP granger causes both unemployment rate and inflation rate within the period of 1991 and 2022. This means that economic recession has significant influence on unemployment, GDP and inflation.

Reversing the causality, a one percent increase in unemployment will mean roughly more than three percent loss in GDP growth. It also implies that output and unemployment does not move one for one. This relationship implies that the rate of GDP growth must be equal to its potential growth just to keep the unemployment rate constant, therefore to reduce unemployment rate in an economy the rate of GDP growth must be above the growth rate of potential output.

Although, Okun's law has been criticized by empirical works that it didn't hold in developed countries but the empirical findings revealed that the law holds in Nigeria. It is therefore important that policy makers who want to solve their unemployment problem should diversify the economy to increase their growth rate since it is the catalyst for reducing unemployment rate.

Conclusion

This study represents an attempt to investigate the impact of economics recession on selected macroeconomic variables in Nigeria. Based on annual data from Central Bank of Nigeria's Statistical Bulletin, the study covers the period 1991to 2022. The methodology adopted include ADF test, cointegration test VAR and causality test. The tests reveal that there is evidence of Okun's law in Nigeria for the period of the study. The study further revealed that for every one percent decrease in GDP unemployment rate will be increasing by 9%. This was collaborated by the granger causality test that revealed that economic recession captured with GDP growth rate granger causes both unemployment and inflation in Nigeria within the sample period.

Recommendations

Based on the findings of this research work, it is necessary to provide recommendations that would aid Nigeria economy

1. Inflation-unemployment relationship in Nigeria has been established to be positive as such policy makers should weigh the options of coming up with a proficient policy that will strike a balance between inflation and unemployment in Nigeria as this will go a long way in improving the living standard of the timing populace.
2. Holistic effort should be made by governments at all levels to create jobs and arrest unemployment. Crimes, unemployment, inequalities, inflation etc. need to be adequately addressed by the policy makers to check the crime rate in the country.
3. The government must take initiatives in balancing fiscal and monetary policies, rising the consumer confidence and spending levels in order to come out of recession, building long-term Economic resilience through proper monitoring, and development of the money market provision of some macro-economic environment to promote private sector growth.
4. Government should encourage and promote the manufacturing. Sector, though provision of soft loans to them. Government should also try and change the psych of the people towards Patronizing made in Nigerian goods as this will go a long way in

generating employment in the country.

5. Finally, effort should be intensified to control and eventually eradicate corruption which is a doubt headed dragon that adverts affect the economy and render majority of the population to poor.

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