International Journal of Accounting Research, 10(1),2025, 49-52
ISSN: 2617-9954
Open Access Journal

International Journal of Accounting Research

Research Article Homepage: www.j.arabianjbmr.com AOJP

Impact of economic recession on the Nigerian economy

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ABSTRACT

This study examines the impact of economic recession on the Nigerian economy from 1996 to 2023. It aims to determine the direction of causality between economic recession and output levels in Nigeria. Data were obtained from the World Bank Database and the Central Bank of Nigeria Statistical Bulletin. Nigeria's output level was measured using real gross domestic product (GDP), while economic recession was measured using inflation, unemployment, and exchange rates. The Toda-Yamamoto non-Granger causality test was employed to determine the causal relationship between economic recession and output levels. The findings reveal no causal relationship between output levels and inflation in Nigeria. However, a unidirectional causality was found running from unemployment to output levels. Additionally, a bidirectional causality exists between exchange rates and output levels. Based on these findings, the study recommends that employment should be prioritized as a key policy tool in addressing inflation and improving output levels in Nigeria.

ARTICLE INFO

Keywords:
Economic Recession, Output Level, Inflation, Unemployment, Exchange Rate

Received: 08 Feb 2025 | Accepted: 15 May 2025
Published: 25 May 2025

1. INTRODUCTION

The Nigerian economy has recently been hit hard by a recession, driven by excessive imports, declining oil revenues, and reduced investment inflows, all of which have significantly impacted the country's economic performance. Nigeria has experienced multiple recessions, with the second quarter of 2016 marking a severe economic downturn often considered the worst in decades. However, this was not the first time the nation had experienced an economic contraction (Contractor, 2021). In 2020, due to the COVID-19 pandemic and a decline in global oil prices, Nigeria faced another recession, which was predicted to be the worst since the 1980s, with the economy expected to contract by 3.2% that year. Nigeria's heavy reliance on oil exports, which account for over 80% of total exports, 30% of banking-sector credit, and 50% of government revenue, makes it highly vulnerable to fluctuations in global oil prices (Abaidoo et al., 2023). The pandemic also led to a decline in private investment, with an estimated five million more Nigerians falling into poverty in 2020. The recession has affected Nigeria's socio-political structures, credit situation, living standards, imports, production, employment, and overall consumption demand. Widespread challenges such as inadequate electricity, substandard housing, lack of potable water, and poor healthcare services still affect 80% of Nigerians, with unemployment worsening due to the recession. Furthermore, Nigeria's high dependence on imports ranging from petroleum products (30% of GDP) to food, textiles, and electronics has exacerbated economic instability. The country's economic growth has slowed in recent years, with GDP growing at just 2.51% in 2023, raising concerns about a potential recession (Kumar et al., 2024).

Economic recession refers to a prolonged decline in economic activity, typically observed in real GDP, real income, employment, industrial production, and wholesale-retail sales (Singh, 2021). Recessions often result from adverse demand shocks, financial crises, trade disruptions, supply-side shocks, or economic policy failures. In Nigeria, recessions have led to lower economic growth, increased unemployment and inflation, reduced purchasing power, and heightened poverty, culminating in widespread hardship and social unrest (Ozili, 2021). Nigeria's economic growth has been hindered by corruption, poor economic management, and a lack of diversification. Overreliance on oil revenues, coupled with mismanagement of public funds, has weakened investor confidence and limited development in other sectors such as manufacturing, agriculture, and services. Governments typically respond to recessions with expansionary macroeconomic policies, such as increasing the money supply, boosting government spending, and reducing taxes (Moreira & Hick, 2021). Although various studies have examined the impact of economic recession on Nigeria's economy, gaps remain in the literature. For instance, Akanni & Raji (2023) explored how recession and corruption affect economic growth, Charles (2022) analyzed the impact of recession on Nigeria's banking sector, and Eneji et al. (2022) examined its effects on macroeconomic stability and sustainable development. However, limited research has investigated the causal relationship between recession and output levels in Nigeria, particularly in developing economies. Understanding this relationship is crucial for policymakers in formulating effective economic strategies. This study aims to fill this gap by employing the Toda-Yamamoto causality test to analyze the direction of causality between recession and output levels in Nigeria. This study is structured into five sections. Section 1 provides the introduction and background. Section 2 reviews the literature. Section 3 describes the methodology. Section 4 presents the empirical findings and discussion, while Section 5 summarizes the results and offers policy recommendations.

2. LITERATURE REVIEW

2.1 Conceptual review

Economic recession is characterized by a significant decline in economic activity, often marked by reduced output (income or expenditure) and rising unemployment rates (Shambaugh & Strain, 2021). Nigeria's economy contracted in both the first and second quarters of 2016, with GDP declining by 0.36% and 2.06%, respectively (CBN, 2016), confirming an economic downturn. John Maynard Keynes (1936) defined an economic recession as a period of declining aggregate demand and reduced consumption of goods and services. He attributed this to falling revenues in the manufacturing sector, which leads to lower production, job losses, and a further decline in demand. Similarly, Omolua & Adeyemo (2021) define recession as a period of declining economic activity spanning two consecutive quarters. Economic recession is also described as "a significant decline in economic activity across various macroeconomic indicators, lasting more than a few months" (Contractor, 2021). During a recession, an economy operates below its full potential, resulting in underutilization of resources, suboptimal production, and rising unemployment (Akram et al., 2023).

2.2 Theoretical Review

The classical theories laid the foundation for several growth theories. Early economists stressed the importance of land (natural resources) and labour (human resources) in economic growth. The foundation for classical growth theory was laid by Adam Smith who posited a supply-side driven model of growth and his function was as follows:

$$Y=f(L, K, T) \quad 2.1$$

Where Y –Output
L –Labour
K –Capital
T-Land so that output was related to labour, capital, and land input. Consequently, output growth (gy) was driven by population growth (gl) investment (gk) and land growth (gt) and an increase in overall productivity (gf).

$$\text{Therefore, } gy = f(gf, gk, gl, gt) \quad 2.2$$

The classicist argued that growth was self-reinforcing as it exhibited increasing returns to scale. As the population grew to occupy the Freeland so did the output. After all the lands are occupied, the output will grow slower than the population. With new labour added to fix land which decreases the land labour ratio, each labour had less land to work with. This means the marginal product of labour will decline and real wages will fall.

Moreover, he view savings as a creator of investment and hence growth, therefore, he saw income distribution as being one of the most important determinants of how fast or slow a nation would grow. It also posited that profits decline not because of decreasing marginal productivity but rather because the competition of capitalists for workers bid wages upward (Anagaw, 2023). Smith also emphasized the division of labour which comes from two sources, first the savings and capital accumulation, and second, the extent of the market. Saving in a capitalist system is regarded as a very important requirement for economic growth. This is so because savings creates investment and hence economic growth. The neoclassical growth model, also known as the exogenous growth model or Solow-Swan growth model is a term used, to sum up, the contributions of various authors to a model of long-run economic growth within the framework of neoclassical economics. This theory developed independently by Robert Solow (1956) and Swan (1956) was the first attempt to model long-run growth analytically. The enterprise of the standard neoclassical growth model is an aggregate production function of the form

$$YE=f(K_E,L_E,A_E)2.3$$

Where
Y is output,
K is capital
L is labour and
A is an index of technology or efficiency.

The model posits that f has the usual neo-classical properties characterized by constant returns to each input and a positive and constant elasticity of substitution. The technological change replaces investment (growth of K) as the primary factor explaining long-term growth, and its level was assumed by Solow and other growth theorists to be determined exogenously that is, independently of all other factors including inflation (Todaro & Smith, 2009). The neo-classical economists believe that raising an economy's long-run trend rate of growth requires an increase in the labour supply and an improvement in the productivity of labour and capital. This model assumes that countries use their resources efficiently and that are diminishing returns to the capital as labour increases. The mainstream of neo-classical growth theory held that increase in savings rate will bring about a temporary increase in aggregate output in the short run but in the long run, output will adjust to a new level and savings accumulation will only affect aggregate output and not its growth rate.

2.3 Empirical Review

Several macroeconomic indices, such as GDP, employment, investment spending, capacity utilization, household income, company income, and inflation, typically fall during a recession, increasing the rate of unemployment as a result. Charles (2022) used annual time series data from 1981 to 2017 to analyze the impact of economic recession on the performance of the Nigerian banking sector. The work used aggregated data from the Central Bank of Nigeria, World Bank Indicators and Nigeria Deposit Insurance Corporation statistical bulletins to obtain and compute data on loans and advances, bank job loss, branch reduction, and number of liquidated banks as proxies for economic recession and return on investment as a proxy for bank performance. Both inferential and descriptive statistical techniques were used to evaluate the data, and the formulated hypotheses were tested using the ordinary least square estimation technique. According to the data analysis, a unit increase in loans and advances and a unit decrease in bank branches can result in 2.36% and 2.05% increases in the level of return on investments, respectively. Also, a strong correlation between loans and advances, the closure of bank branches, and return on investments was discovered.

Eneji, et al. (2022) looked at how the recession affected macroeconomic stability and sustainable development in Nigeria from 1980 to 2016. For data analysis, the Ordinary Least Square (OLS) approach was used. The findings indicate that these variables have a negative impact on sustainable development and economic progress. To understand the reasons of the recession and suggest remedies for long-term economic growth, it is important to look at how it affects the socioeconomic and political life of Nigerians. According to this report, Nigeria's economy has deeper structural issues that are a result of its excessive reliance on foreign modern capitalist cultures. Ibrahim et al. (2019) looked at how recession and corruption affected Nigeria's economy from 1970 to 2016. In the study, secondary data were used. Using econometric methods, such as ordinary least square regression analysis, the data were examined. It was found that a slowdown in economic activity has an impact on all facets of national life, leading to the loss of many employments, budget adjustments by families during a recession, and a consequent decline in social activities. Oyewole and Olaniyi (2017) investigated how business instructors perceived how the economic downturn affected Nigeria's socioeconomic lives. The research used a descriptive survey approach. The data was gathered using a structured questionnaire with five-point rating scale items. The results of the study demonstrated how negatively the economic downturn affected Nigeria's socioeconomic existence. Shido-Ikwu (2017) examined the primary causes of the current economic slump in Nigeria, in addition to other factors. The paper provides a theoretical explanation of how government measures could be able to stop the recession and improve the general economic situation of the Nigerian population. According to the research findings, there are three main categories into which the causes of the economic recession in Nigeria can be divided: legacy issues, policy considerations, and political/security concerns. Awujola and Ejezie (2015) analysis of the effects of the global economic slowdown using a political economy framework. The global economic recession was employed in the study as a variable between micro and macro elements in the fiscal and monetary policies of the state governments and elitist economic managers in the global economic system. The worldwide economic downturn was portrayed as the end of political and economic power, the failure of capitalism, the resurgence of free markets, and the selfishness of individuals who neglected to consider the repercussions of their actions. It states that coordinated efforts between states in the international economic system and national governments, within a broad regulatory framework free of greed to share and sustain economic growth in the troubled financial sector, can lessen the political and economic ramifications of the global economic recession.

3. METHODOLOGY

This study aims at understanding how interrelated or otherwise impact of economic recession on the Nigerian economy. That is to say, this study find out the direction of causality between economic recession and output level in Nigeria. To achieve the aim of this study, we carry out stationarity test to determine the time series properties of the variables. Furthermore, Toda Yamamoto test are carried out on each of the variables. In this study, understanding the relationship that exists between economic recession and output level of Nigeria is important, but the study is more concerned with understanding which variable causes the other. Based on the theoretical and empirical literature, the general model is specified as;

$$RGDP_t = f(INF, UNEMP, EXR) \quad (3.1)$$

Econometric equation for the equation above is specified as.

$$RGDP_t = \beta_0 + \beta_1\ INF_t + \beta_2 UNEMP_t + \beta_3 EXC_t + \ \mu_t \quad (3.2)$$

Where; RGDP = Gross domestic product at current basic prices, INFL= Inflation rate, UNEMP = Unemployment rate, EXR = Exchange rate, β_o, β_1, .. β_3= parameter estimates, u = stochastic error term. Data on these variables were obtained from the World Bank (2023) Database and Central Bank of Nigeria statistical bulletin (2023). In order to achieve the objective above, we formulate the Toda Yamamoto causality equations for the study as:

$$RGDP_t = \alpha_0 + \sum_{i=1}^{k} \theta_{1t}\, RGDP_{t-1} + \sum_{j=k+1}^{k+d_{max}} \theta_{2j}\, RGDP_{t-1} + \sum_{i=1}^{k} \delta_{1t}\, INF_{t-1} + \sum_{j=k+1}^{k+d_{max}} \delta_{2j}\, INF_{t-1} + \mu_{1t}$$

$$INF_t = \beta_0 + \sum_{i=1}^{k} \varphi_{1t}\, RGDP_{t-1} + \sum_{j=k+1}^{k+d_{max}} \varphi_{2j}\, RGDP + \sum_{i=1}^{k} \beta_{1t}\, INF_{t-1} + \sum_{j=k+1}^{k+d_{max}} \beta_{2j}\, INF_{t-1} + \mu_{2t} \quad (3.3)$$

$$RGDP_t = \alpha_0 + \sum_{i=1}^{k} \theta_{1t}\, RGDP_{t-1} + \sum_{j=k+1}^{k+d_{max}} \theta_{2j}\, RGDP_{t-1} + \sum_{i=1}^{k} \delta_{1t}\, UNEMP_{t-1} + \sum_{j=k+1}^{k+d_{max}} \delta_{2j}\, UNEMP_{t-1} + \mu_{1t}$$

$$UNEMP_t = \beta_0 + \sum_{i=1}^{k} \varphi_{1t}\, RGDP_{t-1} + \sum_{j=k+1}^{k+d_{max}} \varphi_{2j}\, RGDP + \sum_{i=1}^{k} \beta_{1t}\, UNEMP_{t-1} + \sum_{j=k+1}^{k+d_{max}} \beta_{2j}\, UNEMP_{t-1} + \mu_{2t} \quad (3.4)$$

$$RGDP_t = \alpha_0 + \sum_{i=1}^{k} \theta_{1t}\, RGDP_{t-1} + \sum_{j=k+1}^{k+d_{max}} \theta_{2j}\, RGDP_{t-1} + \sum_{i=1}^{k} \delta_{1t}\, EXR_{t-1} + \sum_{j=k+1}^{k+d_{max}} \delta_{2j}\, EXR_{t-1} + \mu_{1t}$$

$$EXR_t = \beta_0 + \sum_{i=1}^{k} \varphi_{1t}\, RGDP_{t-1} + \sum_{j=k+1}^{k+d_{max}} \varphi_{2j}\, RGDP + \sum_{i=1}^{k} \beta_{1t}\, EXR_{t-1} + \sum_{j=k+1}^{k+d_{max}} \beta_{2j}\, EXR_{t-1} + \mu_{2t} \quad (3.5)$$

k denotes the optimal lag. This is determined by using the information criteria such as AIC and SIC and d_{max} as the maximum order of integration. The Toda Yamamoto test is designed to address potential endogeneity and causality issues in econometric models. By incorporating this test, the statistical rigor and reliability of results can be enhanced, particularly when dealing with time series data (Ewusie *et al*., 2020). The Toda Yamamoto test allows for the identification of relevant lag structures in regression models, enabling more accurate estimation of parameters and improved model specification. This can lead to more precise and reliable interpretations of the relationships between variables in the model. By implementing the Toda Yamamoto test, it is possible to detect and address potential omitted variable bias in the model. This is particularly valuable

when dealing with complex relationships and multiple endogenous variables, as it helps ensure that all relevant factors are properly accounted for, ultimately leading to more accurate and robust model estimates (Wulff *et al.*, 2023).

4. RESULTS AND DISCUSSION

4.1 Unit Root Test

To avoid spurious regression results that characterize non-stationary time series data, Gujarati et al. (2009) proposed that they should be subjected to a stationarity test. Thus, this study tested the stationarity properties of all the variables. The stationarity test employed was Phillips-Perron (PP) and Augmented Dickey-Fuller (ADF) to aid accuracy, comparison and boost confidence in the regression result. The results obtained are summarized in Table 1

Table 1: Unit Root Testing

Variable	PP				ADF			
	AT LEVEL	PROB.	1st DIFF.	PROB	AT LEVEL	PROB	1ST DIFF	PROB
RGDP	13.1756	1.0000	-4.8365	0.0028	14.4577	1.0000	-4.8405	0.0027
INF	-1.4697	0.1299	-4.1562	0.0002	-2.0540	0.0498	-4.2156	0.0001
UNEMP	1.2909	0.9467	-7.0172	0.0000	1.2909	0.9467	-7.7108	0.0000
EXR	3.6845	0.9998	-3.3152	0.0017	3.5233	0.9997	-3.3152	0.0017

(*) indicates significant at the 10%, (**) significant at the 5% and (***) significant at the 1%
Source: Computed by the Authors

When we tested the stationarity of the dataset using the Phillips-Perron test and Augmented Dickey Fuller test, the result revealed that all the variables are stationary.

4.2 Lag Selection

Before testing for the relationship among the variables in the equations. The study tested for the optimum lags using the VAR lag order selection criteria. After determining the maximum order of integration, the next step involves determining the optimal lag length. The optimal lag length was selected based on different lag length criteria such as Akaike's Information Criteria (AIC), Schwarz Information Criteria (SC), Final Prediction Error (FPE), and the Hannan Quinn (HQ) Information Criteria. The results of the different lag length selection criteria are shown in Table 2.

Table 2: VAR Lag Length Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-677.1346	NA	6.18e+14	45.40897	45.59580	45.46874
1	-527.0455	250.1484	8.21e+10	36.46970	37.40383*	36.76854*
2	-507.7781	26.97436*	7.03e+10*	36.25188*	37.93331	36.78978

** indicates lag order selected by the criterion*

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

As shown in Table 2, the lag length selected by the different selection criteria indicates lag length of 2.

The results of Causality tests based on the Toda Yamamota estimated by the modified WALD test are shown in Table 3. The result shows that the test follows the chi-square distribution with 3 degrees of freedom which is in accordance with the lag length.

Table 3. Toda –Yamamoto Causality (Modified WALD) Test Results

Cause	Effect	Chi squares	Prob	Decisions	Remarks
INF	RGDP	1.8082	0.4049	Do not reject H_0	No Causality
RGDP	INF	0.4057	0.8164	Do not reject H_0	
UNEMP	RGDP	1.7694	0.4128	Do not reject H_0	Unidirectional Causality
RGDP	UNEMP	0.9565	0.0217	RejectH_0	
EXR	RGDP	12.6773	0.0018	Reject H_0	Bidirectional Causality
RGDP	EXR	6.8473	0.0.0326	RejectH_0	

Source: Computed by the Authors

The Toda-Yamamoto results could not reject the hypothesis of no causation running from real gross domestic product (GDP) to inflation and vice versa. Therefore, there is no causal relationship between real GDP and inflation in the Nigerian data. Further investigation is needed to establish the channels that may still link these variables for effective policymaking. The empirical results did not reject the hypothesis of no causality running from unemployment to real GDP but did reject the hypothesis of no causality running from real GDP to unemployment. This implies a unidirectional causality running from real GDP to unemployment, but not the other way around. Finally, the results strongly reject the hypothesis of no causation from exchange rate to real GDP. This indicates that the exchange rate causes real GDP. Additionally, causation runs from real GDP to the exchange rate, unlike other output levels in Nigeria. Therefore, there is a bidirectional causal relationship between the exchange rate and real GDP in Nigeria.

5. CONCLUSION AND RECOMMENDATIONS

This study thus concludes that since inflation and real gross domestic product are two major macroeconomic problems that are eating up the country and are inter woven and the indirect channel of unemployment contributing to the problem, policy measure toward the combat of one should not neglect the other as the efficacy of the policy measures is related to the other problem. Employment has been identified as an important outcome of any welfare intervention. The following recommendations are drawn from the result of this study;

- It recommends that employment should be one of the major tools to be considered in the fight against inflation and real gross domestic product in Nigeria. This should not be left for the government alone, the private sectors are also encouraged to be actively involved in this as well as individuals through imbibing the spirit of entrepreneurship.
- The no causal relationship between inflation and real gross domestic product revealed that policy measures toward the reduction of inflation in Nigeria should not only concentrate on inflation but also incorporate policies of equitable distribution to increase the country's real gross domestic product through progressive taxes and subsidies on basic necessities. The problem of unemployment has been a major economic problem in the country. Although several efforts have been put in by past government to reduce the unemployment rate in the country, the fight against inflation should also be channeled at fighting unemployment in the country.

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