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Macroeconomic instruments and Nigerian economy: The Post global financial crisis and pandemic perspective

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ABSTRACT

The pursuit of strategies to stabilize and grow her economy within and after pandemics has necessitated the use of macroeconomic instruments by the government in Nigeria. Thus, this study investigated the effect of macroeconomic instruments on Nigerian economy from 2008 to 2022. Exchange rate, inflation rate and interest rate were adopted as macroeconomic instruments while real gross domestic product was proxy for Nigerian economy. Ordinary Least Squares (OLS) regression technique was employed to analyze the data sourced from the Central Bank of Nigeria (CBN) Statistical Bulletin (various years). Findings revealed that exchange rate and interest rate had positive and significant effect on Nigerian economy within the period under review. On the other hand, the study showed that inflation rate had negative and significant effect on Nigerian economy within the period of the study. This study recommended, amongst others, that government should keep the inflation rate at a threshold not exceeding 10 percent in order to enhance the recovery of Nigerian economy from pandemics.

Keywords: Macroeconomic instruments; inflation rate; pandemics; exchange rate; interest rate

1. INTRODUCTION

The unending spate of financial, economic and health crises in the world has resonated the call for effective macroeconomic policy formulation and implementation. For instance, 2008/2009 global financial crisis (GFC) brought so many economies to their knees as many corporations and businesses found it difficult to break even. As if that was not enough, the Covid-19 pandemic broke out in 2020 and crippled world economies as many individuals and businesses got shut down in order to escape from the deadly virus (Adu-Gyamfi, Brenya, Gyasi, Abass, Dakwa, Nimoh & Tomdi, 2021). Based on the foregoing, it became incumbent on governments to come up with policies that would engender stability, stimulate economic activities and enhance economic growth. Among the policies of government adopted for such intervention are interest rate adjustment, exchange rate re-alignment and inflation rate targeting (Ilugbusi, 2017). These are called macroeconomic instruments. Despite the assumed accommodative intentions of macroeconomic policies towards stability and economic growth, it has been argued that macroeconomic instruments still have negative effect on some segments of the society (Cunningham, 2008). For instance, when government increases the interest rate, it may attract more foreign investment (investors) who might want to take advantage of prevailing high interest rate in the domestic economy but at the same time it may lead to the death of local industries because of dearth of investible funds. Hence, while increasing interest rate may attract foreign investment, it might also lead to a decrease in domestic investment (Nkoro & Uko, 2013).

Nigerian government has over the years, including the post-global financial crisis and pandemic era, tinkered with her exchange rate, interest rate and inflation rate with the aim of achieving optimal thresholds as well as enhancing economic growth. For instance, the government adjusted the exchange rate such that the Naira exchanged at ₦156.70 per dollar in 2011 while as at the fourth quarter of 2022 the naira exchanged at ₦387.80 per dollar (CBN, 2022). This represents depreciation of the nation’s currency and it is expected that devaluing the Nigerian currency would reduce the price of the nation’s export in the international market thereby increasing export revenue. However, others have argued that devaluation was not the best way to go as it exerts negative influence on Nigeria’s economic growth given that Nigeria imports more than she exports (Oyovwi, 2012). Similarly, the government has over the years adopted double digit inflation rate. For instance, in 2011, inflation rate stood at 10.3% and increased to 12% in 2012. Except for the single digit inflation rates recorded between 2013 and 2015, Nigeria’s year-on-year inflation rate remained double digit in the years that followed even as urban and rural rates stood at 22.01% and 20.72% in December, 2022, respectively (CBN, 2022). With such inflation rate, purchasing power of households and firms has been eroded thereby reducing investment and undermining the nation’s economy.

Finally, interest rate in Nigeria has been adjudged to be among the highest in the world. With the monetary policy rate (MPR) remaining largely double digit at 16.5% as at December, 2022, the lending rate has remained very high such that borrowers have been discouraged from borrowing from the banks (CBN, 2022). This has resulted in decline in domestic private investment and productivity thereby undermining Nigeria's economy. Yet the Central Bank of Nigeria has maintained the double digit monetary policy rate over the years. Placing the decisions of the government as it pertains to exchange rate, inflation rate and interest rate side by side with an economy which has been adjudged the fastest growing economy in Africa and one of the highest growing economies in the world, one wonders to what extent these macroeconomic instruments affect the Nigerian economy.

Given the above, this study sought to provide answers to the following questions:

(i) To what extent does exchange rate affect gross domestic product in Nigeria?
(ii) What is the effect of inflation rate on Nigeria's gross domestic product?
(iii) To what magnitude does Nigeria's interest rate affect her gross domestic product?

Thus, this study examined macroeconomic instruments and Nigerian economy within the post-global crisis and pandemic era with specific objectives being to determine the effects of exchange rate, inflation rate and interest rate on GDP in Nigeria. In tandem with the research questions and specific objectives, three hypotheses were tested in this study namely:

(i) H_{01}: Exchange rate does not significantly affect gross domestic product in Nigeria.
(ii) H_{02}: Inflation rate does not have significantly affect Nigeria's gross domestic product.
(iii) H_{03}: Nigeria's interest rate does not have significantly affect her gross domestic product.

This study covered the period 2008 to 2022. The year 2008 was used as base year for the study to capture the post GFC and pandemic era which ravaged the world economies including Nigerian economy.

2. LITERATURE REVIEW

The endogenous growth theory, neoclassical growth theory, Keynesian growth theory and exogenous growth theory were reviewed in this study. The endogenous growth theory was popularized by the works of Romer in 1986 and Robert Lucas in 1988 and a theory of growth of GDP premised on the belief that internal factors (not external factors) spur increase in gross domestic product in countries. The proponents of endogenous growth theory argued that such internal factors such as innovation, human capital and knowledge are significantly related to the level of GDP growth which countries can achieve. From the views of endogenous growth theorist, positive externalities associated with internal macroeconomic factors (variables) trickle down to key economic sectors thereby making the country to experience increase in gross domestic product.

On the other hand, the neo-classical theory stems from the works of Robert Solow in 1956 and Trevor Swan in 1956 and postulates that a steady growth could be achieved in an economy if there is a proper admixture of three driving forces namely; labour, capital and technology. Accordingly, when the amounts of labour and capital are varied, there is a change in gross domestic product especially in the presence of technological progress. Thus, this theory makes a special case for technological change and argues that it has a huge effect on gross domestic product achievable in an economy. Of particular importance to the theory is the need to accumulate economic capital as a way to achieving increased GDP growth.

The neoclassical growth theory's production function is given as:

$Y = A f(K, L)$

Where:

Y = Gross domestic product

A = Determinant of technological level

L = Labour

K = Share of capital

Finally, the exogenous growth theory principally anchors on the belief that growth of an economy is spurred by external (not internal) factors. Such external factors include increase in investment and improvement in technology, increase in labour quantity and quality and increase in capital through savings. Among these external factors, the proponents of exogenous growth theory argue that increased capital through savings and increase in technological progress were more important in the growth of economies and play more significant role in achieving increased economic growth.

Some empirical works have been carried out on the effect of macroeconomic variables on economic performance or economic growth. For instance, Akbar, Ali and Khan (2012) analyzed the relationship between macroeconomic variables and stock market performance in Karachi Stock Exchange for the period 1999 to 2008. The study employed Cointegration test and Vector Error Correction Mechanism (VECM) as the analytical tools. Findings showed that a negative relationship exists between inflation rate and stock market prices. The study concluded that macroeconomic variables had strong significant impact on stock market performance in Karachi Stock Exchange.

Studying growth effects of macroeconomic stability factors in Nigeria for the period 1980 to 2011, Kolawole (2013) adopted real interest rate, external debt and real exchange rate as macroeconomic variables in the study. Error correction modeling technique was employed in analyzing the data. Findings showed that real interest rate had positive and significant influence on Nigerian economy whereas real exchange rate and external debt had negative and significant influence on Nigerian economy.

In a different study, Khan and Yousuf (2013) investigated the relationship between macroeconomic variables and stock prices in Bangladesh Stock Market. The study adopted deposit rate, exchange rate, consumer price index, crude oil prices, and broad money supply (M2) as the proxies for macroeconomic variables while the All-Share Index served as the measure for stock price performance. Findings showed that inflation rate does not have huge influence on prices of stock; interest rate and crude oil prices had significantly impacted stock market prices in Bangladesh.

For Zafar and Zahid (2013), the research centered on examining macroeconomic factors that determine economic growth in Pakistan and the study covered the period 1959 to 1997. Primary education, stock of physical capital, trade openness, budget deficit as well as external debt served as independent variables while gross domestic product was used as dependent variable. Ordinary Least Squares (OLS) regression analysis on the data showed that primary education, physical capital and trade openness had positive and significant impact on Pakistani economy while budget deficit and external debt had negative and significant impact on Pakistani economy.

Chughtai, Malik and Aftab (2015) investigated major economic variables' impact on Pakistani economy, 1981-2013. Major economic variables included inflation rate, exchange rate and interest rate. From the OLS result, it was evident that inflation rate and interest rate negatively impacted Pakistani economy while exchange rate had positive and significant impact.

Mbulawa (2015) assessed the effect of macroeconomic variables on Botswana's economic growth for the period 1973 to 2012. Gross fixed capital formation, inflation rate, trade openness and foreign direct investment were adopted as macroeconomic variables while gross domestic product captured economic growth. Error correction modeling technique was employed in analyzing the data. Findings revealed that gross fixed capital formation had positively and insignificantly affected the economy while inflation rate and foreign direct investment had positive and significant effect in Botswana.

Analyzing macroeconomic determinants of Nigeria's economy from 1986 to 2012, Ismaila and Imoughele (2015) made use of gross fixed capital formation, foreign direct investment total government expenditure as determinants of economic growth. OLS multiple regression analysis was performed on the data. Gross fixed capital formation, foreign direct investment and total government expenditure were positive and significant macroeconomic determinants of economic growth in Nigeria.

Kryeziu (2016) examined macroeconomic factors' impact on economic growth for the period 2004 to 2014.109 (one hundred and nine) countries were adopted as sample size for the study. Budget deficit, public debt and inflation were used as macroeconomic factors while gross domestic product was used as proxy for economic growth. Ordinary Least Squares (OLS) technique was employed as analytical tool. Findings showed that budget deficit has negative and significant impact while public debt had positive and significant impact on economic growth. The study also showed that inflation had positive and insignificant impact on selected countries' economy.

Similarly, Hussain, Sabir and Kashif (2016) explored macroeconomic variables' impact on Pakistani GDP from 1980 to 2011. Gross domestic product was the dependent variable while interest rate, inflation rate and exchange rate were the independent variables. From the OLS result, it was showed that interest rate and inflation rate had negative and significant impact on GDP whereas exchange rate had positive and significant impact on gross domestic product in Pakistan.

Examining macroeconomic behaviour and economic growth nexus in Ghana from first quarter of 1980 to fourth quarter of 2013, Agyapong, Adam and Aslamah (2016) adopted gross fixed capital formation, real exchange rate, labour force, broad money supply, government expenditure and stock market prices as independent variables. Gross fixed capital formation and labour force had negative connection with economic growth while stock market prices, broad money supply, real exchange rate and interest rate had positive link with Ghana's economy.

A research was conducted Kagendo (2019) on macroeconomic variables' impact on Kenya's economic growth for the period 1983 t0 2017. Workers' remittances, private capital flow, government consumption, gross capital formation and inflation rate were adopted as macroeconomic variables while gross domestic product per capita was adopted as economic growth's measure. OLS multiple regression technique was employed as analytical tool. Findings showed that workers' remittance, gross capital formation, private capital flow and government consumption had positive and high impact on Kenya's economy while inflation rate had negative and huge impact on growth of Kenya.

In a study by Okeke (2020) efforts were made at establishing the correlation between oil prices and macroeconomic variables in Nigeria for the period 1960 to 2018. Exchange rate, inflation and GDP were used as macroeconomic variables. Vector autoregression (VAR) technique was employed. Findings showed that oil prices had significant impact on gross domestic product and exchange rate.

3. METHODOLOGY

Adopting the *ex-post facto* research design, the study determined how exchange rate, inflation rate and interest rate affected Nigeria's gross domestic product using existing data from 2008 to 2022 (15 years). Data were gotten from the CBN Statistical Bulletin; 2022. Anchoring the study on the endogenous growth theory which established that internal factors determine the level of GDP accumulated among countries, Ismaila and Imoughele (2015) specified the connection between macroeconomic variables and economic growth in Nigeria as:

$$RGDP = \int (K, L, FDI, OPEN, INF, GE, MS) \ldots\ldots\ldots\ldots (1)$$

Where;

RGDP = Real gross domestic product (proxy for economic growth)

K = Capital (measured by gross fixed capital formation)

L = Labour force

FDI = Foreign direct investment

OPEN = Trade openness

INF = Inflation rate

GE = Government expenditure

M2 = Broad money supply

In line with Ismaila and Imoughele (2015), the model for this work is modified and specified as:

RGDP = ∫ (EXCHR, INFR, INTR) …………….. (2)

Transforming equation (2) into its linear econometric form, we obtain

$RGDP_t = \beta_0 + \beta_1 EXCHR_t + \beta_2 INFR_t + \beta 3 INTR_t + e_t$ ………… (3)

Where;

RGDP = Real gross domestic product

EXCHR = Exchange rate

INFR = Inflation rate

INTR = Interest rate

β_0 = Constant (intercept) term

β_1, β_2 and β_3 = Coefficient parameters of the explanatory variables

e = Stochastic error term

t = time series notation

By a priori, $\beta_0 > 0$, $\beta_1 < 0$, $\beta_2 < 0$ and $\beta_3 < 0$

4. DISCUSSION OF FINDINGS

Table 1: Ordinary Least Squares (OLS) Result

Dependent Variable: LN(RGDP)

Variable	**Coefficient**	**Std. Error**	**t-statistic**	**Prob. Value**
EXCHR	0.001060	0.000286	3.706290	0.0049*
INFR	-0.016774	0.006925	-2.422318	0.0385*
INTR	0.022670	0.008777	2.583023	0.0295*
C	10.75763	0.119066	90.34997	0.0000
Adjusted R-squared = 0.772084 F-statistic = 14.55035 Prob. (F-statistic) = 0.000847 DW-statistic = 1.740503				

***indicates significant at 5 percent level**

Source: Author’s computation (2024)

This study portrayed that exchange rate had positive and significant effect on real GDP in Nigeria. A percent rise in exchange rate led to 0.11 percent increase in Nigeria’s real GDP. With the probability value of EXCHR (0.0049) being less than the test significant level (0.05), it was evidenced that exchange rate had significant effect on Nigerian economy. This outcome contradicted Kolawole (2013) which found that exchange rate negatively affected Nigerian economy. Perhaps, this finding could be attributed to the diversification efforts of the government especially after the global financial crisis and pandemic which has not only broaden the economic base but has increased the nation's exports. With that Nigeria has grown above merely being a crude oil exporting nation but an exporter of other products. This has led to increase in government revenue, increase in infrastructural development and this has trickled down to other economic sectors thereby increasing aggregate demand. As aggregate demand increases, real GDP in Nigeria increases.

Nevertheless, inflation rate had negative and significant effect on Nigeria's real GDP. A percent rise in inflation rate led to 1.68 percent decrease in Nigeria's real GDP. With the probability value of INFR (0.0385) being less than the test significant level (0.05), this study established that inflation rate had significant effect on Nigerian economy. This finding corroborates Umaru and Zubairu (2012) which came up with a negative correlation between inflation and real GDP in Nigeria. Perhaps, this finding might be explained by the fact that the rising inflationary pressures in Nigeria have become devastating to the point that firms are facing increasing cost of production. Increased cost of production has led to closure of many firms thereby reducing Nigeria's real gross domestic product.

Interest rate had positive and significant effect on real gross domestic product in Nigeria. A percent increase in interest rate led to 2.23 percent increase in real GDP in Nigeria. With the probability value of INTR (0.0295) being less than the test significant level (0.05), this study summed that interest rate had significant effect on Nigerian economy. This finding corroborates Kolawole (2013) which found a positive and significant effect of interest rate on Nigerian economic growth. Perhaps, this might be attributed to government policy to offer special interest rates to preferred sectors such as agricultural, manufacturing and solid minerals sectors in order to boost investment in such sectors. With increased investment in those sectors came increased economic growth.

The coefficient of determination of 0.772084 showed that 77 percent of variations in real GDP of Nigeria were attributed to changes in exchange rate, inflation rate and interest rate. This implied that the remaining 23 percent variations in Nigeria's real gross domestic product were due to other macroeconomic instruments not included in the model. The Prob. (F-statistics) of 0.000847 was less than the test significant level of 0.05 and indicated that the model was appropriate and significant.

5. CONCLUSION AND RECOMMENDATIONS

After a pandemic, the macroeconomic strategies of government tend to determine the extent that an economy could grow. While some governments could resort to increasing government expenditure so as to re-activate economic activities, others might resort to use of exchange rate, inflation rate and interest rate to ensure stability and enhance economic growth. Thus, the nexus between macroeconomic instruments and economic growth has remained an issue of intense debate. This study made emphasis to the Nigerian economy and specifically determined the effect of exchange rate, inflation rate and interest rate on the economy after the pandemics. From the empirical findings, it was revealed that exchange rate and interest rate positively and significantly affected the Nigerian economy while inflation rate negatively and significantly affected the economy. In conclusion, the study argued that macroeconomic strategies significantly affected the Nigerian economy after the pandemics.

The following recommendations were made in this study:

(i) Government should maintain the existing exchange rate regime in order to increase the nation's export and enhance the Nigerian economy.

(ii) The government should keep the inflation rate at a threshold not exceeding 10 percent in order to reverse its adverse effect on Nigerian economy.

(iii) Government should maintain the present interest rate so as to ensure that Nigerian economy grows unhindered.

AUTHORS' CONTRIBUTIONS

This research was carried out by combined efforts of the authors.

Ariwa, F. O. designed the study and carried out empirical review,

Onigah Peter Oko source for the data used in the analysis.

Okoroafor, O. M. did the analysis and interpretations. Both authors read and approved the final manuscript.

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