IJEFMDS

JOURNAL OF & FINANCE

INTERNATIONAL JOURNAL OF ECONOMICS, FINANCE AND MULTIDISCIPLINARY DEVELOPMENT STUDIES

MODELING QUANTITATIVE EASING AND OUTPUT GROWTH IN NIGERIA

ISSN Online: 2634-1370

ISSN Print: 2678-2944

Volume 1, Issue 1, September (2025).

International Journal of Economics, Finance and Multidisciplinary Development Studies
ISSN Online: 2634-1370
ISSN Print: 2678-2944
Volume 1, Issue 1, September, (2025)

MODELING QUANTITATIVE EASING AND OUTPUT GROWTH IN NIGERIA

Authors:
[1] Shehu Ibrahim Alfa
[2]Prof. Francis A. Akawu
[3]Prof. Joseph M. Ibbih
[4]Danladi Augustine, PhD

Affiliation:
[1]Human Resources Department,
Central Bank of Nigeria,
Head Office, Abuja,
Nigeria.
[2,3&4]Department of Economics,
Nasarawa State University, Keffi,
Nigeria.

Contacts:
[1] sibrahim647@yahoo.com
[2]akawuaudu@nsuk.ng
[3]jmibbih@gmail.com
[4]austindanladi108@gmail.com

Dates:
Received: 2025-08-15
Accepted: 2025-08-22
Published: 2025-10-30

Citation:
Shehu Ibrahim Alfa, Prof. Francis A. Akawu, Prof. Joseph M. Ibbih & Danladi Augustine, PhD. (2025). Modeling Quantitative Easing and Output Growth in Nigeria. (IJEFMDS), *1*(1), 232 – 252. https://veritaspublishing.net/index.php/home/article/view/01.

Abstract

The study modeled quantitative easing (QE) on economic growth in Nigeria for the period 2000Q1-2023Q4. Due to globalization of financial systems, the 2008 financial and economic crises and the subsequent UMPs adopted by advanced economies flooded excess liquidity into developing economies, culminating in currencies depreciation, drops in exports and rising inflation, thus necessitating the use of QE. The study adopts ex-post facto design and the VAR methodology to model QE and economic growth in Nigeria. The study relies on secondary data sourced from CBN on Ways and Means Advances (WMA), Central Bank Balance Sheet (CBS), Inflation rate (INF) and Anchor's Borrowers Programmed Fund (ABPF) and their effects on economic growth were examined. The variables indicate no unit root at order one and were cointegrated with economic growth in the long run. The findings indicate that WMA and INF had negative effect on economic growth, while CBS and ABPF had positive effects on growth. The study recommends the expansion and channeling of credit schemes via QE programmed to productive sectors and efficient funds disbursement to stimulate output growth in the Nigerian economy.

Keywords: *Central Banks, Financial System, Inflation, Quantitative Easing, Output Growth.*

International Journal of Economics, Finance and Multidisciplinary Development Studies (IJEFMDS)
ISSN Online: 2634-1370
ISSN Print: 2678-2944
Vol. 1 No. 1, September, 2025, Pg 232 - 252
DOI: https://doi.org/10.33003/ijefmds-2023-0705-2028

Introduction

Traditionally, the monetary authorities are saddled with maintaining price stability through effective control of the money supply (CBN, 2024). As the financial atmosphere may dictate, policy rates and other complementary traditional monetary tools are often varied to channel the money supply optimally. The utility of the traditional tools is however stretched out during financial and economic crises as witnessed during the 2008 Global financial crises when the tools failed to function as intended. Following the failures of the "conventional tools," it became imperative for central banks to explore other novel policies options hereafter known as "unconventional" monetary policies (UMP). These novel policies measures are intended to drive output growth, pinned down inflation and guide the exchange rate trajectory in the economy (CBN, 2022). These policies typically entail three things: guiding interest rates expectations, altering the mix and the size of the central bank balance sheet (IMF, 2023).

Inclusive in the unconventional monetary policy tools is the quantitative easing (QE). Conceptually, QE embeds the action of the central banks to acquire large and long-term government securities intended to inject more liquidity into the economic system (CBN, 2016). In 2001-2006, the current rounds of QE were first premiered in Japan when YEN 50 trillion was applied to counter economic stagnation and the ineffectiveness of the conventional tools (Matousek, Papadamou, and Tzeremes, 2019). Ever-since, QE had entered into the monetary tool-kits of central banks across advanced economies of the world. The widespread use of QE gained importance post-2008 Global financial crises when central banks in developed economies leverage on the use of QE at intervals to stimulate their economies, scale-up bank lending and galvanize spending (IMF, 2022).

According to Bernanke (2020), central banks adopt QE to expand their balance sheets and stimulate economic activities. The adoption of QE however often raises concerns over the central banks' balance sheet risks, and while these are valid concerns, Tobias, Christopher, Marcin, Jesper and Pawel (2024) argued that, beyond central banks losses and gains, QE provides macroeconomics stimulus and provide a sizable push on output growth and inflation management. Along this premise, Bowdler & Radia (2012) maintains that QE eases liquidity

constraints and stimulate the economy for growth. In the same vein, Larry (2020) contended that the goals of QE policies are to spur economic growth via credit and capital expansion to the real and informal sectors of the economy. Notably, QE lowers interest rates and thus increases the quantum of interest-sensitive investment as interest rate falls. The scaling-up of investment as propelled by falling interest rates boost economic activities, create new jobs, and lowers unemployment significantly (CBN, 2016, p. 6).

While QE is a child of necessity, its adoption must be proceeded with only after due diligence by policymakers and the necessary cautions observed. Obviously, there are a number of caveats that must not be neglected. First, how much reliance should be placed on QE in boosting the economy during recession? This is against the background that QE relies on premium terms and there are likely limits to depressing them further when already low (Tobias, Christopher, Marcin, Jesper and Pawel, 2024). Second, the pitfalls of expanding the balance sheet outrageously and the associated balance sheet risks must be closely considered before adopting QE policies.

Scholars have identified worries with the adoption of QE as a policy measure during crises. Orphanides (2023) argued that QE can make it difficult to responds nimbly to overheating pressures. Also, QE potentially increases banks monetary base leading to increased ability to grant loans and thus injecting increased liquidity into the economy and thus fueling inflation and its expectation (CBN, 2016). Moreover, the adoption of QE triggers rapid fluctuations in interest rates, with negative effects on the banking public and the worsening of the country's business cycle (Al-Slehat, Zaher, Fattah, & Box, 2020; Shkodina, Melnychenko, & Babenko, 2020).

In implementing UMPs such as QE in Nigeria, the CBN balance sheet expanded. Official statistics showed that it grew by 9.1 percent in 2011 and 23.46 percent in 2012 and thereafter declined by 27.16 percent in 2013 (CBN, 2016). These balance sheet increases reflected mostly in expanded credits transmission to the private sectors. Notably, credits to the private sectors grew by 277.67 percent, 13.05 percent, 283.66 percent and 7.43 percent, respectively between 2009, 2010, 2011 and 2012 (CBN, 2016). In addition, QE was deployed principally through

International Journal of Economics, Finance and Multidisciplinary Development Studies (IJEFMDS)
ISSN Online: 2634-1370
ISSN Print: 2678-2944
Vol. 1 No. 1, September, 2025, Pg 232 - 252
DOI: https://doi.org/10.33003/ijefmds-2023-0705-2028

Ways and Means to fund Federal Government's fiscal deficits. Following the 2007/2008 Global financial and Covid pandemic crises, oil price crashes, revenue flow crashes and recession threatens. Eventually, deficits accumulated as revenue flows stunted. Thus, by 2020, Ways and Means advance to fund government deficits reached ₦2.9 trillion. The amount peaked at ₦23 trillion in 2022 (CBN, 2023, Larry, 2020). In the periods that follow, critics accused the CBN of effectively crowding out the private sector for the sake of funding government's deficits.

From the foregoing, the adoption of QE is not simply a question of policy choice. Empirical evidence indicates that central banks adopt QE during and post-financial/economic crises only in the context of deep recession in order to weather the storm (Tobias, Christopher, Marcin, Jesper and Pawel, 2024)). Hence, in advanced economies the policies were accompanied with well-structured plans to seamlessly unwind when the economic storm is over (IMF, 2023).

Are QE optimal policy tools? Only in the context of economic crises and recession and should be accompanied by detailed plans of unwinding. Again, compared to conventional fiscal stimulus, QE is significantly a cost-effective medium to stimulate output and inflation for developing economies like Nigeria grappling with revenue and growth challenges. Further, QE tends to significantly improve the consolidated fiscal position of the government. These facts necessitate the need to explore how to leverage QE policies to attain economic stability and growth fundamentals in the Nigerian economy.

Conceptual Reviews

Quantitative Easing (QE)

QE are sets of monetary policy instruments utilize when the interest rates approach the zero lower bound (ZLB) and the conventional policy rates have become dysfunctional and no longer efficacious to stabilize the economy (CBN, 2016). The policies gained popularity during and post-global financial and economic crises of 2007/2008 when the conventional monetary tools failed to normalized the financial system. At its core, QE represents large scale assets purchases by the central banks which are aimed at directly injecting more liquidity into the economy to

boost credits availability to economics agents and to mobilize increase spending in the economy (Markus, 2022). QE increases the monetary base or banks reserves following patterns that contradict the conventional ways (Fawley & Neely, 2013). In practice, QE involves the purchase of long-term, corporate debts or asset-backed securities (Williamson, 2017).

Unconventional Monetary Policy (UMP)

The UMP connotes the set of policies adopted by central banks to stimulate economic activity when traditional monetary policy tools, such as lowering interest rates, are no longer effective (Kenton, 2022). Specifically, UMPs are tailored to impact term spreads and influence liquidity and credit spreads (Perera, 2010). Succinctly, in Nigeria for instance, UMPs involve, majorly, the use of special interventions in various sub-sectors of the economy.

Inflation

Inflation denotes the growth in the price level (Nasiha and David, 2021). The price level is a metric that captures the arrays of prices of the good and services demanded typically in an economy (US Bureau of Labor Statistics, 2021). Inflation is the continuous and persistent rise in the general price level in an economy, giving rise to fall in the corresponding value of money (Ojo, 2000). The value of money is the quantum of goods and services that a unit of money can purchase (NBS, 2021). Theoretically, the value of money and the price level are inversely related (Ojo, 2000).

Economic Growth

Theoretically, economic growth is a measure of the size of the economy over given time frame. The size of the growth is captured by the increase in the quantities of goods and services generated in the economy. Economic growth is measured in real and nominal terms. Nominal economic growth with respect to Nigeria involves increases in the naira value of production over time. This encompasses changes in the volume of production as well as changes in the prices of goods and services generated in the economy. Real economic growth captures increase in the volume produced only, neglecting changes in prices (NBS, 2021).

Theoretical Reviews

Modern Quantity Theory of Money (MQTM)

Attributed to Monetarists such as Milton Friedman, Karl Brunner, and Allan Meltzer in the 1970s and 1980s, the MQTM posits the proportionality between the price level and the volume of money in circulation.

The MQTM takes its root from the equation of exchange:

$$MV = PY \quad \text{..........(2.1)}$$

Where M is the money supply, V is the velocity of money, and PY is the nominal value of output or nominal GDP. The equation of exchange provides the framework that relates money supply and inflation in an economy. The theory maintains that the velocity of money is constant, and that the money supply is exogenous, implying it is controlled by the central bank.

The MQTM propagates the "monetary transmission mechanism," which explains how changes in the money supply affect the economy through varying the interest rates, and thus impacting spending and investment in the economy. The theory also emphasizes the importance of expectations in determining the effectiveness of monetary policy. According to the theory, if people expect inflation to rise in the future, they will adjust their spending and investment decisions accordingly, which can reduce the effectiveness of monetary policy. The (MQTM) offers valuable insights into the relationship between money supply, price levels, and economic activity, which are highly relevant to understanding and designing credit easing policies. In extant perspective, an increase in the money supply, if managed appropriately, can influence aggregate demand and stimulate economic growth, especially during periods of financial distress when credit markets are frozen or functioning poorly (Friedman, 1956; Mishkin, 2007).

Classical Theory of Inflation

The core of the Classical Theory of Inflation is the Phillips Curve developed in 1958 by Williams Philip. The Philip constructs suggest an inverse relationship between unemployment and inflation. In the tenets of the theory, economic growth comes with inflation, which in turn

should lead to more jobs and less unemployment (Investopedia, The Phillips Curve Economic Theory Explained, 2022).

The presence of a Phillips curve suggests that the central bank can attempt to lower the unemployment rate by allowing inflation to go up. The stable tradeoff between inflation and unemployment however broke down in the 1970s with the rise of stagflation thus projecting the role of expectations in determining the relationship between inflation and unemployment. This suggests that the inverse relationship between inflation and unemployment could only hold over the short run and ceases to exist in the long run. There exists a rate of unemployment that corresponds to an economy's potential, that is, the natural rate of unemployment. If the central bank tries to push unemployment below that natural rate, then in the long run, after prices and inflation expectations have fully adjusted, not only inflation but also unemployment will rise.

Empirical Reviews

Wu, Xie, and Zhang (2024) examined if unconventional monetary and fiscal policy contribute to the COVID inflation surge in the US. The study estimated a VAR with the effective federal funds rate to capture the conventional monetary policy. The sample ranges from 1960Q1 to 2007Q3. The study finds that key economic mechanism works through a disinflationary channel in the Phillips curve while monetary and fiscal stimuli put positive pressure on inflation through the usual demand channel. The study illustrated a negative supply-side channel both theoretically and empirically.

Akinboyo (2024) examined the viability of the CBN intervention programmed on performance of inflation and output using an ARDL model and evaluated the effects of the programmed on the responsiveness of inflation and output to changes in the monetary policy rate, using a segmented model. The results show that the intervention programmed have no-significant impact on inflation in Nigeria both in short and in the long-run.

Ciccarelli et al (2017) investigated the unconventional monetary policy and the anchoring of inflation expectations. This study made use of monthly data over the sample period 2008M11

— 2014M06. The variables that we use are GDP (interpolated), CPI, the size of the Balance Sheet Using a SVAR framework extended to incorporate policy news, the result showed that accounting for the predictable path of the balance sheet following the Fed's asset purchase announcements is fundamental to properly assess the effects of UMP.

Papadamou et al (2018) investigated the unconventional monetary policy effects on output and inflation: A meta-analysis. Data was collected from sixteen published studies and examined how output and inflation are affected by expansionary non-conventional Quantitative Easing (QE) shocks and the proportion of heterogeneity that can be attributed to different moderators. The study results indicated that FAVAR specifications increase output response in all horizons, whereas prices only in the short-run.

Elbourne et al (2018) investigated the effects of unconventional monetary policy in the euro area and the individual countries of the euro area. Monthly data for the period January 2009 to November 2016 and SVAR model was applied in this study. The result found that unconventional policy shocks have relatively small effects on output and inflation.

Akinboyo (2023) empirically evaluate the effects of the Central Bank of Nigeria's (CBN) intervention on inflation in Nigeria from 2007M12 to 2020M8. The paper employed three-variable Vector Error Correction Model (VECM), with headline inflation examined as an endogenous function of the CBN's intervention funds and exchange rate movements. The study finds that the CBN's interventions through credit-easing to specific industries reduce inflation in the long term, particularly food inflation. The outcome suggests that there is divergence in the outcome of unconventional monetary policy in developed and developing countries.

Hagenbäck, (2022) investigated the effects of quantitative easing (QE) policies on consumer inflation in Sweden, the United States, and the euro area. Furthermore, the effects of QE policies on additional macroeconomic variables have also been investigated. To study the effects, quarterly data was used in a local projections impulse response function (IRF). The result implies that QE increased consumer inflation in the euro area, but not in Sweden. No clear result could be inferred for the United States. In the case of Sweden, QE caused

International Journal of Economics, Finance and Multidisciplinary Development Studies (IJEFMDS)
ISSN Online: 2634-1370
ISSN Print: 2678-2944
Vol. 1 No. 1, September, 2025, Pg 232 - 252
DOI: https://doi.org/10.33003/ijefmds-2023-0705-2028

deprecation of the exchange rate. A link between QE policies and inflation expectations was also found for the euro area, a link not found for Sweden.

Mouabbi and Sahuc, (2019) analyzed the impact of unconventional monetary policies by the European Central Bank using a dynamic stochastic general equilibrium model. The results show that, without the unconventional monetary policy, both year-on-year inflation and GDP growth would have been smaller by 0.3 per cent and 0.5 per cent, respectively, over the period 2014Q1-2016Q1.

Methodology

The study utilized secondary data sourced from the CBN Bulletins on credit easing in Nigeria during the 2000Q1-2023Q4 and employed the Vector autoregressive (VAR) model propounded by Christopher Sims (1980) as a statistical model to capture the relationship between multiple quantities as they change over time. The VAR model is suitable because it can handle situations where multiple variables potentially influence each other; through their current and past values (Enders, 2010).

A pth-order VAR is denoted "VAR(p)" mostly rendered as "a VAR with p lags". A pth-order VAR model is written as

Yt = c + 〖A1〗 _(y_(t-1)) + 〖A2〗 _(y_(t-2)) + …... + 〖AP〗 _(y_(t-p)) + e_t ……. (3.1)

The variables of the form Y_(t-i) indicate that variable's value i time periods earlier and are called the "ith lag" ofYt. The variable c is a k-vector of constants representing the intercept of the model. A_i is a time-invariant (k × k)-matrix and e_t is a k-vector of error terms.

Model Specification

In congruence with the VAR Model as developed by Christopher Sims (1980), we specify our model in functional form:

$$GDP_t = f(WMA_t, CBS_t, INF_t, ABPF_t)$$

…….(3.2)

International Journal of Economics, Finance and Multidisciplinary Development Studies (IJEFMDS)
ISSN Online: 2634-1370
ISSN Print: 2678-2944
Vol. 1 No. 1, September, 2025, Pg 232 - 252
DOI: https://doi.org/10.33003/ijefmds-2023-0705-2028

Equation (3.2) is rendered in its VAR property as:

$$GDP_t = \alpha_{10} + \sum_{i=1}^{n} \alpha_{11i} GDP + \sum_{i=1}^{n} \alpha_{12i} WMA_{t-i} + \sum_{i=1}^{n} \alpha_{13i} CBS_{t-i} + \sum_{i=1}^{n} \alpha_{14i} INF_{t-i} + \sum_{i=1}^{n} \alpha_{15i} ABPF_{t-i} + \mu_{1t} \quad (3.3)$$

$$WMA_t = \alpha_{16} + \sum_{i=1}^{n} \alpha_{17i} + \sum_{i=1}^{n} \alpha_{18i} WMA_{t-i} + \sum_{i=1}^{n} \alpha_{19i} CBS_{t-i} + \sum_{i=1}^{n} \alpha_{20i} INF_{t-i} + \sum_{i=1}^{n} \alpha_{21i} ABPF_{t-i} + \mu_{1t} \quad (3.4)$$

$$CBS_t = \alpha_{23} + \sum_{i=1}^{n} \alpha_{24i} GDP + \sum_{i=1}^{n} \alpha_{25i} WMA_{t-i} + \sum_{i=1}^{n} \alpha_{26i} CBS_{t-i} + \sum_{i=1}^{n} \alpha_{27i} INF_{t-i} + \sum_{i=1}^{n} \alpha_{28i} ABPF_{t-i} + \mu_{1t} \quad (3.5)$$

$$INF_t = \alpha_{30} + \sum_{i=1}^{n} \alpha_{31i} GDP + \sum_{i=1}^{n} \alpha_{32i} WMA_{t-i} + \sum_{i=1}^{n} \alpha_{33i} CBS_{t-i} + \sum_{i=1}^{n} \alpha_{34i} INF_{t-i} + \sum_{i=1}^{n} \alpha_{35i} ABPF_{t-i} + \mu_{1t} \quad (3.6)$$

$$ABPF_t = \alpha_{37} + \sum_{i=1}^{n} \alpha_{38i} GDP + \sum_{i=1}^{n} \alpha_{39i} WMA_{t-i} + \sum_{i=1}^{n} \alpha_{40i} CBS_{t-i} + \sum_{i=1}^{n} \alpha_{41i} INF_{t-i} + \sum_{i=1}^{n} \alpha_{42i} ABPF_{t-i} + \mu_{1t} \quad (3.7)$$

Where:

$\boldsymbol{\alpha}$ = Unknown coefficients for the lags of each of the variables

$\boldsymbol{\beta}$ = Intercept in each equation

$\boldsymbol{e}$ = Reduced form error terms, and

$\boldsymbol{i}$ = Lag length to be determined by the information criteria.

$\boldsymbol{GDP_t}$ = Gross Domestic Product (economic growth)

$\boldsymbol{WMA}$ = Ways and Means Advances

$\boldsymbol{CBS}$ = Central Bank Balance Sheet

$\boldsymbol{INF}$ = Inflation Rate

$\boldsymbol{ABPF}$ = Anchor's Borrowers Programme Fund

International Journal of Economics, Finance and Multidisciplinary Development Studies (IJEFMDS)
ISSN Online: 2634-1370
ISSN Print: 2678-2944
Vol. 1 No. 1, September, 2025, Pg 232 - 252
DOI: https://doi.org/10.33003/ijefmds-2023-0705-2028

On prior ground, we expects that $\alpha_1, \alpha_2, \alpha_3, and\ \alpha_4 < 0$

Results and Discussion

Table 1: Augmented Dickey-Fuller (ADF) test Result

Variables	ADF Test	Mackinnon Critical Values at 5%	P-value	Stationarity Level
GDP	-6.374938	-3.004861	0.0000	I (1)
WMA	-5.606340	-3.004861	0.0002	I (1)
CBS	-6.435918	-3.004861	0.0000	I (1)
INF	-6.405614	-3.004861	0.0000	I (1)
ABPF	-5.799492	-3.004861	0.0001	I (1)

Source: **Author's Computation Using EVIEWS 12, 2025**

Table 1 confirms that the variables are all integrated of order one since their ADF test values are greater than their Mackinnon critical values at 0.05 percent level of significance. This allows us to reject the null hypotheses that the variables exhibit unit root.

Cointegration Results

Table 4.2: Trace Cointegration test Result

Hypothesized No. of CE(s)	Eigen value	Trace Statistic	0.05% Critical Value	Prob**
None*	0.901013	107.9102	69.81889	0.0000
At most 1*	0.800270	57.02942	47.85613	0.0054
At most 2	0.517411	21.59207	29.79707	0.3218
At most 3	0.147294	5.563100	15.49471	0.7464
At most 4	0.089287	2.057603	3.841466	0.1514

Source: **Author's computation Using EVIEW 12, 2025**

Table 2 shows that the Trace statistics at None (107.9102) and At Most 1 (57.02942) were greater than the critical values (69.81889, 47.85613) at 0.05 percent statistically significant level.

International Journal of Economics, Finance and Multidisciplinary Development Studies (IJEFMDS)
ISSN Online: 2634-1370
ISSN Print: 2678-2944
Vol. 1 No. 1, September, 2025, Pg 232 - 252
DOI: https://doi.org/10.33003/ijefmds-2023-0705-2028

Based on this test result, the null hypothesis of no cointegration amongst GDP, WMA, CBS, INF and ABPF in the long run was rejected at the 0.05 percent significance level.

Granger Causality Results

Table 3: Granger Causality Test Results

Null Hypothesis	Obs	F-statistics	P-value	Decision	Remark
D(WMA) does not Granger Cause D(GDP)	33	8.25836	0.0002	Reject H_0	Bidirectional
D(GDP) does not Granger cause D(WMA)		4.51847	0.0073	Reject H_0	Causality
D(CBS) does not Granger cause D(GDP)	33	2.54335	0.0658	Accept H_0	Unidirectional
D(GDP) does not Granger cause D(CBS)		4.41061	0.0082	Reject H_0	Causality
D(INF) does not Granger cause D(GDP)	33	1.17371	0.3473	Accept H_0	Unidirectional
D(GDP) does not Granger cause D(INF)		3.83152	0.0152	Reject H_0	Causality
D(ABPF) does not Granger cause D(GDP)	33	3.04710	0.0365	Reject H_0	Unidirectional
D(GDP) does not Granger cause D(ABPF)		1.23162	0.3239	Accept H_0	Causality

Source: **Author's computation 2025, Using E-Views, 12.0**

Table 3 shows bidirectional causality between WMA and GDP. This implies that, the two variables can granger cause each other. Again, it shows unidirectional causality between WMA and GDP, CBS and GDP, and INF and GDP, all flowing from GDP. Also, the result indicates unidirectional causality between ABPF and GDP, which flows from ABP.

International Journal of Economics, Finance and Multidisciplinary Development Studies (IJEFMDS)
ISSN Online: 2634-1370
ISSN Print: 2678-2944
Vol. 1 No. 1, September, 2025, Pg 232 - 252
DOI: https://doi.org/10.33003/ijefmds-2023-0705-2028

Regression Result

Table 4: VAR Regression Results

	GDP	WMA	CBS	INF	ABPF
GDP (-1)	-1.225961	4.004676	4.509072	4.796601	3.411138
	(0.18795)	(3.77076)	(2.83358)	(2.24575)	(1.71498)
	[6.52282]	[1.06203]	[1.59130]	[2.13586]	[1.98903]
WMA (-1)	0.000572	0.562017	0.051266	-0.143544	-0.010176
	(0.01044)	(0.20953)	(0.15746)	(0.12479)	(0.09530)
	[0.05472]	[2.68223]	[0.32559]	[-1.15027]	[-0.10678]
CBS (-1)	0.005948	0.587339	0.879265	0.181600	0.105448
	(0.01900)	(0.38114)	(0.28641)	(0.22699)	(0.17334)
	[3.31312]	[1.54102]	[3.06997]	[0.80002]	[0.60831]
INF (-1)	- 0.043535	0.134287	0.148741	0.277391	-0.217821
	(0.01942)	(0.38960)	(0.29277)	(0.23203)	(0.17719)
	[2.24185]	[0.34468]	[0.50805]	[1.19548]	[-1.22929]
ABPF (-1)	0.008818	0.105712	-0.719529	-0.235568	0.261719
	(0.02497)	(0.50096)	(0.37645)	(0.29836)	(0.22784)
	[3.35313]	[0.21102]	[-1.91134]	[-0.78955]	[1.14869]
C	-0.549402	-144.0569	-4.537010	-38.73142	-16.87064
	(3.36049)	(67.4203)	(50.6636)	(40.1535)	(30.6634)
	[-0.16349]	[-2.13670]	[-0.08955]	[-0.96458]	[-0.55019]
R-squared	0.998736	0.978187	0.835466	0.706235	0.789908
Adj. R-squared	0.997938	0.964410	0.731550	0.520699	0.657218
Sum sq. resids	0.102310	41.18073	23.25444	14.60693	8.518313
S.E. equation	0.073381	1.472212	1.106308	0.876804	0.669576
F-statistic	1251.380	71.00330	8.039798	3.806455	5.953045
Log likelihood	46.52166	-49.44179	-40.29819	-32.85820	-24.22975
Akaike AIC	-2.095104	3.902612	3.331137	2.866137	2.326859
Schwarz SC	-1.499649	4.498067	3.926592	3.461593	2.922315
Mean dependent	10.14502	19.95938	15.39782	13.34931	10.71617
Durbin-Watson h stat** 0.408240	0.650408	0.615987	0.421637	0.338234	
Determinant resid covariance	1.46E-08				
Log likelihood	16.23571				
Akaike GDPormation criterion	3.860268				
Schwarz criterion	7.433000				
Number of coefficients	78				

Source: Author's Computation 2025, using E-view 12.0 version

The table highlights the long run relationship. The regression equation is depicted thus;

$$GDP_t = -0.549402_{t-1} - 1.225961GDP_{t-1} - 0.000572WMA_{t-1} + 0.005948CBS_{t-1} - 0.043535\ INF_{t-1} + 0.008818ABPF_{t-1} \quad \ldots\ldots(4.1)$$

International Journal of Economics, Finance and Multidisciplinary Development Studies (IJEFMDS)
ISSN Online: 2634-1370
ISSN Print: 2678-2944
Vol. 1 No. 1, September, 2025, Pg 232 - 252
DOI: https://doi.org/10.33003/ijefmds-2023-0705-2028

From the VAR regression in table 4, overall, as indicated by the R^2, the explanatory variables explained 0.99 percent of the variation in economic growth (GDP), leaving only 0.01 percent unaccounted for in the model but present in the error term. The Durbin's h-statistic is within the critical value bounds of $-1.96 < h < 1.96$ signifying the lack of autocorrelation in the error terms.

On apriori grounds, the results indicate that only CBS_{t-1} and $ABPF_{t-1}$ conform to the apriori expectations of a positive relationship with GDP_t the dependent variable. Contrary to the economic apriori however, the coefficients of WMA_{t-1}, GDP_{t-1} and INF_{t-1} were all negative, indicating that they bear a negative relationship with GDP_t the dependent variable.

WMA has negative coefficient (-0.000572), indicating it has a negative effect on GDP in Nigeria. The coefficient of WMA implies that all things being equal a unit change in WMA tend to decrease the GDP by 0.05 percent, respectively, during the period under review.

CBS has positive coefficient (0.005948), indicating it has a positive effect on GDP in Nigeria. The coefficient of CBS implies that all things being equal a unit change in CBS tend to increase the GDP by 0.59 percent, respectively, during the period under review.

INF has negative coefficient (-0.043535), indicating it has a negative effect on GDP in Nigeria. The coefficient of INF implies that all things being equal a unit change in INF tend to decrease the GDP by 4.35 percent, respectively, during the period under review.

ABPF has positive coefficient (0.008818), indicating positive impact between ABPF and GDP in Nigeria. The coefficient of ABPF implies that all things being equal a unit change in ABPF tend to increase the GDP by 0.88 percent, respectively, during the period under review..

Heteroskedasticity Test

Table 5 Breusch-Pagan-Godfrey Test

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.796938	Prob. F (10,11)	0.6360
Obs*R-squared	9.242600	Prob. Chi-Square (10)	0.5092
Obs*R-squared	9.242600	Prob. Chi-Square (10)	0.5092

Source: Author's computation using EViews 12.00, 2025

International Journal of Economics, Finance and Multidisciplinary Development Studies (IJEFMDS)
ISSN Online: 2634-1370
ISSN Print: 2678-2944
Vol. 1 No. 1, September, 2025, Pg 232 - 252
DOI: https://doi.org/10.33003/ijefmds-2023-0705-2028

In Table 5 since the p-values are greater than the 0.05 percent level, we fail to reject the null hypothesis (H_o) of a constant variance and concludes no Heteroskedasticity. We therefore conclude that our regression coefficients are efficient and fit for estimation.

Discussion of Findings

The paper modeled how quantitative easing (QE) drives economic growth in Nigeria. The use of QE is often necessitated when the conventional tools of monetary policies are stripped of efficacies. While the usefulness of quantitative easing can be empirically justified, it must be applied cautiously to prevent overheating the price level. Alyaa (2022) argued that QE is most effective when applied alongside a significant fiscal policy geared at stimulating the economy. From our result, WMA indicates a negative coefficient with insignificant effects on economic growth trajectory in Nigeria between 2000 and 2023, which conflicts with the economic a priori expectation that credit expansion through Ways and Means advances would positively drives economic growth, especially in developing economies where increased liquidity often boosts aggregate demand. This outcome suggests a positive signaling mechanism consistent with the expectations channel of monetary policy (Woodford, 2003). This result agrees with that of Kure, Mbutor, Rotimi and Adamu (2019) in which unconventional monetary policy using the instrument of the central bank balance sheet leads to decline in economic growth rates.

Similarly, INF had a negative coefficient and showed significant effects on economic growth in Nigeria; contrary to the anticipated positive relationship between QE and economic growth. Again, CBS showed a positive coefficient indicating a direct relationship between CBS and GDP. CBS increases the rate of GDP by 0.005 percent and is also statistically significant in its effects on GDP. This result aligns with economic theory which suggests that such interventions bear a positive signaling effect on economic growth projections. This result correlates with those of Hassan, Fausat and Baba (2016) that establishes a positive relationship between QE variables and economic growth.

The findings further indicate that ABPF showed a positive coefficient agreeing with economics apriori of the model. But while this variable increases the economic growth rate, the effects is insignificant. This result agrees with those of Adediran et al., (2019) and Orji, Anthony-Orji

ISSN Online: 2634-1370
ISSN Print: 2678-2944
Vol. 1 No. 1, September, 2025, Pg 232 - 252
DOI: https://doi.org/10.33003/ijefmds-2023-0705-2028

and Mba, (2015) who found a positive correlation between QE and economic growth with the contrast that, while these studies reported a positive significant effect of QE variables on economic growth, the extant empirical results report positive but insignificant effect of QE variables on the growth of the economy.

Conclusion

The findings showed how QE interacted with economic growth rates in Nigeria over the course of 2000Q1-2023Q4. Modeling QE variables indicate different growth trajectories. While WMA and INF drive growth negatively, CBS and ABPF conversely drive growth positively. Thus, it may be concluded that QE generally has positive effects on economic growth in Nigeria during 20001-2024 especially when the central bank succeeded with inflation management.

Recommendation

On the premise of the findings, we make the following recommendations:

1. The government through the central bank should expand and channel credit schemes via QE channels to productive sectors to stimulate growth in the economy.
2. The central bank and related agencies should optimize funds disbursement to promote investment and output growth.
3. The policymakers should reconciled QE measures across demand-side and supply-side sectors to curtailed excess liquidity growth that could overheat the system.
4. The central bank should communicate QE policies effectively and unveiled detailed plans to unwind when crises situations are over.

References

Adediran, O. S., George, E. O., Alege, P. O., & Obasaju, B. O. (2019). Is there any relationship between monetary policy tools and external credit-growth nexus in Nigeria? Cogent Economics & Finance, 7(1), 1625100.

Admati, A. R., & Hellwig, M. (2016). The Bankers' New Clothes: What's Wrong with Banking and What to Do about It. Princeton University Press.

Adrian, T., & Shin, H. S. (2010). "The Changing Nature of Financial Intermediation and the Financial Crisis of 2007–09." FRB of New York Economic Policy Review, 16(1), 1-15.

Al-Slehat, Z. A. F., Zaher, C., Fattah, A., & Box, P. (2020). Impact of financial leverage, size and assets structure on firm value: Evidence from industrial sector, Jordan. INTERNATIONAL JOURNAL OF ECONOMICS AND FINANCE STUDIES Vol: 14 No: 1 Year: 2022 ISSN: 1309-8055 (Online) (pp. 409-426) Doi: 10.34109/ijefs.20220018

Blinder, A. S. (2008). How central banks fail: An insider's view of the shadow banking system. Penguin Books.

Bernanke, B. S. (2016). The courage to act: A memoir of the crisis of subprime mortgages and the financial meltdown. Random House.

Bernanke, B. S. (2020). The New Tools of Monetary Policy. The American economic review, 110(4), 943-983. https://doi.org/10.1257/aer.110.4.943

Bowdler, C., & Radia, A. (2012). Unconventional monetary policy: the assessment. Oxford review of economic policy, 28(4), 603-621. https://doi.org/10.1093/oxrep/grs037

Brunnermeier, M. (2009). The alchemy of finance: Banking, credit, and the crisis of capitalism. New Jersey Princeton University Press.

Carvalho, C. (2011). The new monetary economics. Cambridge University Press.

Cecchetti, S. G., & Mohanty, A. R. (Eds.). (2016). Unconventional monetary policy: An international evaluation. Oxford University Press.

Ciccarelli, M., Garcia, J. A., & Montes-Galdón, C. (2017). Unconventional monetary policy and the anchoring of inflation expectations.

Central Bank of Nigeria. (2024). Unconventional monetary policy: Concept, transmission, channels and the Nigerian experience. Central Bank of Nigeria Briefs, 14(6), 3-9.

Enders, W. (2010). Applied Econometrics Using Time Series Data (3rd ed.). Wiley Global Education.

Elbourne, A., Ji, K., & Duijndam, S. (2018). The effects of unconventional monetary policy in the euro area. CPB Netherlands Bureau for Economic Policy Analysis Discussion Paper 371.

Federal Reserve Board. (2023). Board of Governors of the Federal Reserve System. Retrieved from Federal Reserve.gov: https://www.federalreserve.gov/monetarypolicy.htm

Friedman, M. (1956). A Theory of the Consumption Function. Princeton University Press.

Goodhart, C. A. E. (2011). The evolving role of central banks. MIT Press.

Hagenbäck, M. (2022). Quantitative easing's impact on inflation. NEKH01 Bachelor's Thesis in the Department of Economics Lund University.

Hassan, B. D., Fausat, A. F., & Baba, Y. A. (2016). Impact of monetary policy in Nigeria on inflation, exchange rate and economic growth. International journal of economics and business management, 2(5), 67-82.

Larry, C. I. (2020). Quantitative easing, a necessary Monetary Policy tool for post-coronavirus economic recovery. https://businessday.ng/life/article/quantitative-easing-a-necessary-monetary-policy-tool-for-post-coronavirus-economic-recovery/

International Monetary Fund. (2022). World Economic Outlook: Inflation Measures. Retrieved from https://www.imf.org/en/Publications/WEO

International Monetary Fund. (2023). World Economic Outlook: Inflation Measures. Retrieved from https://www.imf.org/en/Publications/WEO

Investopedia. (2022, March 22). The Phillips Curve Economic Theory Explained. Retrieved from Investopedia: https://www.investopedia.com/terms/p/phillipscurve.asp

Kenton, W. (2022, November 22). Economy - Monetary Policy. Retrieved from Investopedia: https://www.investopedia.com/terms/n/nonstandard-monetary-policy.asp#:~:text=What%20Is%20Non%2DStandard%20Monetary,of%20line%20with%20traditional%20measures.

Kure, E. U., Mbutor, O. O., Rotimi, U. A., & Adamu, Y. (2019). The central bank balance sheet as a tool for monetary policy: Evidence from Nigeria. CBN Economic and Financial Review, 57(2), 27-58.

Matousek, R., Papadamou, S. T., Šević, A., & Tzeremes, N. G. (2019). The effectiveness of quantitative easing: Evidence from Japan. Journal of International Money and Finance, 99, 102068. doi: https://doi.org/10.1016/j.jimonfin.2019.102068

Mishkin, F. S. (2007). The economics of money, banking, and financial markets. Pearson/Addison-Wesley.

Mouabbi, S., & Sahuc, J. G. (2019). Evaluating the macroeconomic effects of the ECB's unconventional monetary policies. Journal of Money, Credit and Banking, 51, 831-858.

National Bureau of Statistics (NBS) (2021) https://www.nigerianstat.gov.ng/

Ojo, M.O. (2000). The role of the Autonomy of the Central Bank of Nigeria (CBN) In Promoting Macroeconomic Stability. CBN Economic and Financial Review, 38(1).

Orji, A., Anthony-Orji, O. I., & Mba, P. N. (2015). Financial liberalization and output growth in Nigeria: Empirical evidence from credit channel. International Journal of Economics and Financial Issues, 5(1), 297-311.

Orphanides, A. (2003). Monetary policy rules and the Great Depression. American Economic Review, 93(1), 1-28.

Papadamou, S., Kyriazis, N.A., & Tzeremes, P.G. (2018). Unconventional monetary policy effects on output and inflation: A meta-analysis. International Review of Financial Analysis 1-30. https://doi.org/10.1016/j.irfa.2018.11.015

Perera, A. (2010). Monetary policy in turbulent times: Impact of unconventional monetary policies. SSRN. doi: http://dx.doi.org/10.2139/ssrn.1669948

Schenkelberg, H., & Watzka, S. (2013). Real effects of quantitative easing at the zero lower bound: Structural VAR-based evidence from Japan. Journal of International Money and Finance, 33, 327-357. doi: https://doi.org/10.1016/j.jimonfin.2012.11.020

Shkodina, I., Melnychenko, O., & Babenko, M. (2020). Quantitative Easing Policy and Its Impact on the Global Economy. Financial and Credit Activity-Problems of Theory and Practice, 3, 76-88. doi: https://doi.org/10.18371/fcaptp.v2i33.207223

Tobias, A, Christopher, E., Marcin, K., Jesper, L, and Pawel, Z. (2024). Macroeconomic and fiscal consequences of Quantitative Easing.

US Bureau of Labor Statistics. (2021). Consumer Price Index. Retrieved from https://www.bls.gov/cpi/

Woodford, M., & Walsh, C. E. (2003). Interest and prices: Foundations of a theory of monetary policy. Macroeconomic Dynamics, 9(3), 462-468.

Wu, C. J., Xie, Y., & Zhang, J. (2024). Does unconventional monetary and fiscal policy contribute to the COVID inflation surge in the US? Staff Working Paper/Document de travail du personnel—2024-38.