CONVENTIONAL AND UNCONVENTIONAL MONETARY POLICY MEASURES AND ECONOMIC GROWTH IN NIGERIA

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Abstract

This study investigates the impact of conventional and unconventional monetary policy measures on economic growth in Nigeria. Amidst persistent economic challenges exacerbated by the COVID-19 pandemic, understanding the effectiveness of monetary policy tools is crucial for policymakers. While traditional literature often focuses on conventional tools, this study fills a gap by examining both conventional measures like the Monetary Policy Rate and unconventional interventions such as Quantitative Easing (QE) and bailouts. Utilizing Vector Error Correction Models (VECM), the study analyzes long-run and short-run relationships between these measures and real GDP growth from 1990 to 2020. Findings reveal nuanced dynamics: while higher interest rates positively impact long-run growth, increased bailouts to subnational governments and real sector interventions by the Central Bank of Nigeria (CBN) have negative long-term effects, suggesting potential crowding-out effects and market distortions. Conversely, Quantitative Easing positively influences long-run growth, indicating its potential to stimulate aggregate demand. Short-run dynamics suggest a rapid self-correction mechanism within the system, but conflicting short-term impacts of policy measures necessitate further investigation. Policy recommendations emphasize the importance of balancing inflation control with growth promotion, evaluating the design and effectiveness of CBN interventions, and cautious management of unconventional policies like Quantitative Easing. These findings provide valuable insights for policymakers in Nigeria and other developing economies facing similar challenges.

***Keywords**: Monetary Policy, Economic Growth, Conventional Tools, Unconventional Measures, Quantitative Easing (QE), Vector Error Correction Model (VECM).*

1. INTRODUCTION

Boosting economic growth is a major focus for governments worldwide, as it fuels poverty reduction, employment, and human development (World Bank, 2020). Policymakers use various levers, including macroeconomic policy, to achieve this goal. Among various drivers

of growth, macroeconomic policy plays a key role in influencing a nation's economic performance (Liu et al, 2019; Kubendran, 2021; Sedegah & Odhiambo, 2021). This policy has two main tools: fiscal policy (taxation, spending, borrowing) and monetary policy. This study focuses on monetary policy, which aims to maintain price stability and influence the availability of credit (Peersman, 2011; Von-Borstel et al, 2016).

Central banks traditionally use conventional tools like interest rate adjustments, open market operations, and reserve requirements. When interest rates are low, unconventional tools like large-scale asset purchases and forward guidance come into play (Dilts, 2019). The 2007 financial crisis and COVID-19 pandemic limited the effectiveness of conventional tools (Kandrac & Schlusche, 2016; Rodnyansky & Darmouni, 2017; others). Central banks adopted quantitative easing (QE) to expand their balance sheets and stimulate economies (Rosi, 2021). When interest rates are very low, people may prefer holding cash, creating a liquidity trap where conventional policy loses its effectiveness (Keynes & Hicks, 1937). Unconventional measures aim to overcome this trap by increasing money supply and boosting growth.

Nigeria faces persistent economic challenges, exacerbated by the COVID-19 pandemic. Real GDP growth declined from 9.7% in 2010 to -1.8% in 2020 (National Bureau of Statistics, 2021), reflecting declining living standards. Inflation averaged 12.6% (Central Bank of Nigeria, 2020), while unemployment rose from 4.31% in 2015 to 8.1% in 2019. Rural areas are disproportionately affected, with poverty and inequality remaining high (World Bank, 2020). Given its pivotal role, the Central Bank of Nigeria (CBN) has deployed various policies, both conventional and unconventional, to address these challenges. This includes managing internal factors like rising prices and external factors like fluctuating export revenue and exchange rate volatility. The CBN's balance sheet significantly increased from N133.36 billion in 1990 to N43,884.81 billion in 2019 (CBN, 2020).

Despite the above, many studies on monetary policy and economic growth in Nigeria focus on traditional tools, neglecting the growing use of unconventional policies by the CBN. Existing literature rarely compares the effectiveness of conventional and unconventional measures on economic indicators like GDP, and even less frequently assesses the potential positive or negative impacts of real sector interventions, direct bailouts, quantitative easing, and monetary policy rate adjustments. This research gap is concerning because evidence suggests direct lending by central banks can disincentivize proper buffering by financial institutions, potentially increasing future financial stress (Galí, 2018; Nakamura & Steinsson, 2018). The growing use of such interventions in Nigeria (e.g., Anchor Borrowers

Programme) warrants exploration of their economic impact. Additionally, concerns exist that the CBN's large-scale bond purchases blur the lines between monetary and fiscal policy, potentially resembling government spending financed by money creation. Despite these concerns, no empirical studies have investigated the specific implications of quantitative easing in Nigeria. This forms the basis of this study.

2. REVIEW OF RELEVANT LITERATURE

Typically, Central banks utilize traditional tools like quantitative (general/indirect) and qualitative (selective/direct) measures to manage the money supply. These tools include **Quantitative instruments (Bank rate policy, Open market operations, Reserve requirements).** These tools aim to indirectly regulate credit availability and achieve economic goals like price stability and growth. When conventional methods prove insufficient, central banks resort to unconventional measures like **Quantitative easing (QE) (**Large-scale asset purchases (e.g., government bonds) to inject liquidity and stimulate credit). This aims to directly reactivate credit for households, businesses, and governments, influencing consumption and investment decisions. The need for unconventional tools arises when Traditional methods reach their limits (e.g., interest rates near zero) and Economic situations demand stronger intervention (e.g., financial crises). John Maynard Keynes' **Liquidity Trap theory** explains how, during recessions, even near-zero interest rates fail to stimulate investment due to risk aversion.

The Liquidity trap theory was first developed by John Maynard Keynes in his 1936 book "The General Theory of Employment, Interest, and Money." The theory posits that in certain circumstances, monetary policy becomes ineffective in stimulating economic growth, and can even lead to negative outcomes. The theoretical postulation of the Liquidity trap theory is that when interest rates are very low, people and businesses may prefer to hold cash rather than investing it, due to the perception that the risk of investment is too high relative to the low return. In this situation, the demand for money becomes perfectly elastic, and even if the central bank tries to increase the money supply through monetary policy, it would have no effect on interest rates or investment. One of the assumptions of the Liquidity trap theory is that the economy is in a recession or depression, with high unemployment and low economic activity. Another assumption is that the central bank has already lowered interest rates to near-zero levels but still failed to stimulate investment and economic growth.

The Liquidity trap theory has important linkages to economic growth because it suggests that monetary policy may not always be effective in stimulating growth, especially when the economy is already in a very weak state. This theory is often used to argue in favor of fiscal policy, such as government spending or tax cuts, as a more effective tool for boosting economic growth in times of recession or depression. Furthermore, the Liquidity trap theory is relevant to understanding the limitations of conventional monetary policy in the aftermath of the 2008 financial crisis. After the crisis, many central banks around the world implemented a policy of low or negative interest rates to stimulate growth, but the efficacy of this policy has been debated due to concerns that it may have led to a liquidity trap.

Beyond theoretical appeal, the use of conventional and unconventional monetary policy has empirical proof. Studies of unconventional policies began in 2008 following the global financial crisis which render conventional tools ineffective. The first study considered in this regard is the work of Boeckx, Dossche & Peersman (2017) who examined the impact of central banks' balance sheet policies in a Zero Lower Bound (ZLB) in euro area between 2008 to 2011. The study employed the structural vector autoregressive model (SVAR). Following the analysis of data, the study found the policy has positive and significant impact on output growth and prices. Burriel & Galesi (2018) validated the work of Boeckx et al (2017) when they examined the extent to which unconventional monetary policy has impacted on growth in European Union member states. Using the SVAR model, the study found that unconventional monetary measures have more impact on output in countries with robust financial system than conventional monetary policy.

De-Oliveira, Maia, De-Jesus, & Besarria (2018) analyzed the spillover impacts as well as channels of volatility from and to Brazilian stock market (Bovespa) between 2014 and 2016, a period marked as one of the most volatile periods since the subprime crisis. The study employed a MGARCH-BEKK, DCC and t-Copulas modelling and found that US monetary policy and rebalancing of portfolios generates volatility to Brazil. However, Bovespa also generates volatility to commodity markets and US bonds market. This is explained by the role that Brazil plays as mediator of these markets when allocators diversify their positions with Latin America and in commodities. In Japan, Montgomery & Volz (2019) have analyzed how effective the Japan's bold experiment with unconventional monetary policy is on economic growth. The study utilised a panel of bi-annual bank data covering the full universe of Japanese

commercial banks over a fifteen-year period. Panel regression techniques were employed, and the study found that Japan's unconventional monetary policy was effective.

In a related study, Bartkiewicz (2020) explored the role of unconventional monetary policy measures such as asset purchase programmes (referred to as quantitative easing) on economic growth in Poland. The rationale for the study is expose economic justification of using numerous asset purchase programmes launched by central banks. The employed regression models using a set of macroeconomic data and found that recent developments tend to favour the former hypothesis that the current issue may likely be settled within several years and can be informed by business cycle developments in major developed economiess. During the same period, Czudaj (2020) examined how effective the negative interest rate policy conducted by several central banks to stabilize economic growth and inflation expectations through the signaling channel is. The study employed a descriptive survey research design and sampled about 44 economies between 2002 and 2017. The Ordinary Least Square Regression models were used and the study found the introduction of negative policy rates tend to have indirect and significant impact on expectations regarding 3-month money market interest rates and also 10-year government bond yields. Additionally, the study provided further evidence that unconventional monetary policy tool has a significant impact on GDP growth as well as inflation expectations, suggesting that the negative interest rate policy tends to boost economic growth and address a deflationary spiral.

In another study, Ali (2021) analysed the consequences and policy context of a ZLB in the UK. The study identified policy alternatives such as revised inflation target, negative interest rates, and QE. The study employed a time varying SVAR Model after the estimation of the model, the study found that unconventional measure in the ZLB has significant implications on the labour market, price stability, real economic growth in the UK. Similarly, Churm, Joyce, Kapetanios & Konstantinos (2021) assessed macroeconomic impact of the unconventional monetary policies quantitative easing (QE) and lending scheme employed by the Bank of England during the global economic crisis. More specifically, the study estimated the impact of these measures on bank funding costs, and long-term interest rates, and economic growth. The study utilised the Bayesian vector autoregression (VAR) estimated using simulation, and the Auto-regressive distributed lag (ARDL) model. The study found that Bank's QE and the lending scheme boosted GDP by between 0.5% and 0.8%.

In the United States, Masoud, Bein, & Khalifa (2020) examined the link between exchange rate movements and unconventional monetary policy using data of United States quantitative

easing. The study employed Autoregressive Integrated Moving Average (ARIMA) and Autoregressive Conditional Heteroskedasctic (ARCH). Specifically, the study analysed the effect of unconventional monetary policy measures implemented in the United States upon the exchange rate movement/volatility in the emerging and growth-leading economies (EAGLEs), which include Brazil, India, Mexico, Indonesia, Philippines, and Turkey. The study employed two series of exchange rates (end-of-period exchange rate (EER) and average exchange rate (AER)) between the periods 1990:01 and 2018:04 and AER spans over 1980:01 to 2018:04 period. Volatility of EER and AER were measured variance series of the ARCH model. The models serve not only as a mean equation for the ARCH volatility measure, but they also served as estimator for EER and AER for each country. The study found that India is the only country among the EAGLEs whose exchange rate movement is affected by the U.S. unconventional monetary policy. Another important point is the negative effect of QE policies on the volatility of both AER and EER across the EAGLEs countries. The implication is that QE policies tend to reduce the uncertainty in the foreign exchange of the EAGLEs countries. Hence the policy makers in the EAGLEs countries do not need to take any action whenever the United States pursues unconventional monetary policy.

In another US study, Kenourgios, Papadamou, Dimitriou, & Zopounidis (2020) assessed how professionals' U.S. forecasts are impacted by the Fed's QE and tapering announcements quantifying the effects of tapering programs' announcements and the Fed's quantitative easing (QE). The study employed a vector autoregression (VAR) analysis. Following the estimation of VAR model, the study found that first QE (QE1) program appears to be more effective as it significantly affects the variability of near- and medium-term forecasts on GDP, inflation and short-term interest rates. This is not the case for these variables of long forecast horizons across all QE/tapering announcements, the forecasts of U.S. currency and long-term rates present significant short-lived responses, while the tapering displays a dominant effect on the volatility of long-term rates across long-term forecast horizons. A dynamic correlation analysis among different horizon forecasts also reveals that the Fed successfully anchor inflation and real economic growth expectations during the expansionary policy (QE) periods. Additional findings show the anchoring of the expectations across different horizons on short-term rates, as opposed to long-term rates, during the QE1 program. During the contractionary (tapering) period, the decrease in the correlations among different horizons for the short-term rates' forecasts is a sign that the Fed increases the range of possible outcomes and highlights a signal of a monetary policy change

Unlike in other developed countries, only a few studies have been carried out on how unconventional monetary policy has impacted on economic growth in Africa. This, according to Ncube (1996) was because Central Banks in developing countries are still trying to grapple with the intricacies of their functions with budding financial system on hand, and with emphasis on price stability as the sole monetary policy objective on other hand. One of such empirical studies is Bom & Khumalo (2021) who evaluated if a forward guidance unconventional monetary policy measure could help South African Government regain monetary policy credibility. The study employed the Auto-Regressive Distributed Lagged (ARDL) model and ascertained if monetary policy credibility level tends to change the views of economic agents on inflation expectations within in the shortrun and longrun. Following the analysis of data, the study found an asymmetric credibility at a threshold of 5.5% lowered inflation expectations.

In Nigeria, however, it is regrettable to note that there is no known study that has evaluated the impact of unconventional monetary policy despite the increased reliance by the CBN on measures such as direct intervention in real sector, bailout for governments and other institutions, and quantitative easing policy. Most of the existing studies on monetary policy in the country focus more on conventional policy. It is against this backdrop that this study will be undertaken. The Central Bank of Nigeria (CBN), just like those in other countries, has continued to employ two kinds of policy instruments: conventional, which is the CBN's control of the policy interest rate to achieve certain macroeconomic objectives (e.g. price stability), and unconventional which involves direct lending to households, SMEs, financial and nonfinancial institutions, governments, and outright purchases of bonds from the government, and corporate organisations. Despite the above, little is known on how the policy has impacted on economic growth in Nigeria. This study is designed to fill this gap.

3. METHODOLOGY

This research follows a quantitative approach to test the relationship between unconventional and conventional monetary policy measures on economic growth in Nigeria. This aligns with the positivist assumption of employing empirical evidence to answer research questions (Saunders et al., 2007). Quantitative methods are chosen as the study seeks to collect and analyze numerical time-series data. The study primarily employs the **Liquidity Trap model**, which suggests that conventional monetary policy tools become ineffective in stimulating

growth during severe economic downturns (Krugman, 1998). In such situations, interest rates reach near-zero, limiting further reductions. Even increasing the money supply does not translate to increased economic activity as individuals and businesses prioritize holding cash.

The study utilizes time series data on real economic growth (RGDP) a proxy of economic growth as the dependent variable. The proxies for unconventional monetary policy measures include total amount of all interventions by the CBN in real sector (Int) and total bailout to subnational governments and other institutions (Bail) are proxies for. The monetary policy rate (MPR) is the proxy of conventional monetary policy. Data on these variables are obtained from the Central Bank of Nigeria's statistical bulletin available online at https://www.cbn.gov.ng/documents/Statbulletin.asp. The data cover the period 1990 – 2020. The data were obtained on December, 2022.

The **Vector Error Correction Model (VECM)** was employed to analyze the dynamic relationships between variables. This model extends the framework of a Vector Autoregressive (VAR) model by incorporating an error-correction term in each equation. This term captures the short-run adjustments towards long-run equilibrium arising from deviations. The VECM allows for the simultaneous estimation of both short-term dynamics and long-term equilibrium relationships among variables. This enables comprehensive analysis of how the system responds to deviations from equilibrium and the speed of convergence back to it. By examining the error-correction terms, we gain insights into the interdependencies and feedback mechanisms among the variables (Johansen, 1995).

The theoretical VECM model is formulated as follows

$$\Delta yt = \alpha\beta' yt - 1 + \sum_{i=1}^{p-1} \lceil_i \Delta y_{t-1} + \varepsilon t \qquad (3.1)$$

where:

Δ: Operator differencing,

$\Delta yt = yt - yt-1 \; yt-i$: Vector variable endogenous with the 1st lag

εt: Vector residual.

Γi: Matrix with order k × k of coefficient Endogenous of the i-th variable

α: Vector adjustment, matrix with order (k × r)

β: Vector cointegration (long-run parameter) matrix (k × r)

Equation 3.1 is modified and presented in two (2) endogenous variables as stated below.

$$\Delta(RGDP) = a_0 + a_1 RGDP\phi_{t-1} + \sum_{i=1}^{q1} a_{2i} \Delta(RGDP_{t-i}) + \sum_{i=1}^{r1} \psi_{1i} \Delta(MPR_{t-i}) + \varepsilon_{1t} \; ....(1)$$

$$\Delta(\text{RGDP}) = \psi_0 + \text{RGDP}\psi_{t-1} + \sum_{i=1}^{q2} a_{3i}\,\Delta(\text{RGDP}_{t-i}) + \sum_{i=1}^{z2} \Upsilon_{2i}\,\Delta(\text{Int}_{t-i}) +$$

$$\sum_{i=1}^{k2} \eta_{2i}\,\Delta(\text{Bail}_{t-i}) + \varepsilon_{2t} \quad \dots\dots\dots\dots (2)$$

Where RGDP, Int, Bail, and MPR are previously defined. The data estimation was done using Eviews 10.

4. RESULTS AND DISCUSSION

Prior to estimating the VECM, the study conducted unit root tests to assess the stationarity of variables. All the variables exhibited non-stationarity in their levels but became stationary after first differencing. This indicates they are integrated of order one (1)), justifying the use of the VECM framework (Pesaran et al., 2001). To establish the existence of long-run relationships among the variables, the study employed Johansen cointegration tests. Both the Trace statistic and Max Eigen statistic exceeded their respective critical values at the 5% significance level, suggesting the presence of **two cointegrating equations**. This confirms the existence of long-run equilibrium relationships between the variables, rejecting the null hypothesis of no cointegration.

The estimated cointegrating vectors and their associated error-correction terms would provide further insights into the specific nature of these long-run relationships and the dynamic adjustments towards equilibrium are presented below.

4.1 Long-Run Model

The estimated Vector Error Correction Model (VECM) sheds light on the long-run relationship between conventional and unconventional monetary policy measures and economic growth in Nigeria.

$$\text{RGDP}(-1) = 2.814696 - 0.079371\,\text{BAILOUT}(-1) - 0.093798\,INT(-1)$$
$$+ 0.256920\,MPR(-1) + 0.34967\,\text{QE}(-1)$$

The equation indicates that a one-unit increase in lagged **BAILOUT** negatively impacts real economic growth (RGDP) by **0.079371** units in the long run, with a statistically significant p-value less than 0.05. This finding aligns with the crowding-out theory, which suggests that

government bailouts may compete with private investment for resources, hindering long-term economic growth. Additionally, it supports the **moral hazard** argument, where bailouts might discourage subnational governments from taking prudent risks, ultimately impacting economic dynamism.

Similar to bailouts, **lagged** interventions by the CBN in the real sector (INT(-1)) negatively impact long-run GDP. This might suggest unintended consequences when policy interventions distort market mechanisms or create inefficiencies, hindering organic economic growth. Conversely, both a past increase in the Monetary Policy Rate (MPR(-1)) and Quantitative Easing (QE(-1)) contribute to higher real GDP in the long run. This aligns with conventional economic theory, where **higher MPR** attract investment, while **increased money supply** can stimulate aggregate demand and growth.

4.2 Short-Run Model Dynamics

The study estimates short-run effects and Error Correction Mechanisms (ECM).

$$D(RGDP) = 0.053651 + 1.305798\, D\big(RGDP(-1)\big) + 0.060043\, D\big(BAILOUT(-1)\big)$$
$$+ 0.062901 D\big(INT(-1)\big) - 0.324291\, D\big(MPR(-1)\big)$$
$$- 0.345870\, D\big(QE(-1)\big) - 0.951645\, ECMt - 1$$

The short-run VECM analysis suggests a relatively rapid convergence towards long-run equilibrium, with a 95.16% adjustment rate per period ($p < 0.05$). This indicates a robust self-correction mechanism within the system, ensuring that deviations from equilibrium are quickly brought back into balance. The positive coefficient for the lagged change in real GDP (1.305798, $p < 0.5$) signifies persistence, implying that past economic expansions tend to carry over into the present. This highlights the momentum inherent in economic growth dynamics. On Impact of Policy Measures, the model shows a positive and statistically significant coefficient for the lagged change in bailouts ($p < 0.5$) suggesting that recent increases in bailouts contribute to short-term growth. However, due to the conflicting long-run finding indicating negative impacts, further investigation is needed to understand the specific context and mechanisms at play. On Central Bank Interventions to the real sector, the study found a marginally significant positive coefficient for its lagged change ($p > 0.5$) in the shortrun. On Monetary Policy Rate (MPR), the study found a negative and statistically significant coefficient

for its lagged change (-0.324291, p < 0.5). This supports the conventional theory that higher interest rates dampen short-term economic activity by discouraging borrowing and investment. The negative and highly significant coefficient for the lagged change in QE (-0.345870, p < 0.5) seems counterintuitive and requires careful examination. It's essential to consider alternative explanations, such as model limitations or omitted variables that might be influencing this relationship.

5. CONCLUSION AND POLICY RECOMMENDATIONS

This study employed a Vector Error Correction Model (VECM) to analyze the long-run and short-run relationships between various monetary policy measures and economic growth in Nigeria. The key findings are summarized below:

Long-Run:

i.   **Bailouts:** Increased bailouts to States negatively impact long-run economic growth, potentially due to crowding-out effects and reduced incentives for prudent management by subnational governments.

ii.   **CBN Interventions:** Real sector interventions by the central bank also have a negative long-run impact, suggesting potential unintended consequences on market mechanisms and organic growth.

iii. **Monetary Policy Rate (MPR):** Higher interest rates in the long run contribute to higher economic growth, aligning with conventional theory.

iv.   **Quantitative Easing (QE):** Increased money supply in the long run also positively impacts economic growth, suggesting its potential to stimulate aggregate demand.

Short-Run Dynamics:

- The model suggests a relatively rapid self-correction mechanism within the system, ensuring deviations from long-run equilibrium are quickly adjusted.

- Past economic expansions have a positive influence on current growth, highlighting the importance of sustaining momentum in economic activity.

- The seemingly positive short-run impact of bailouts contradicts the negative long-run finding, necessitating further investigation into the specific context and mechanisms at play.

- Lagged changes in both the Monetary Policy Rate and Quantitative Easing appear to have negative short-run impacts on growth, requiring further exploration to understand these counterintuitive findings and rule out alternative explanations.

Policy Implications:

i. **Bailouts:** While bailouts might be necessary in specific situations, policymakers should carefully consider their long-term implications for economic growth and explore alternative solutions that incentivize responsible financial management at subnational levels.

ii. **CBN Interventions:** The central bank should evaluate the design and effectiveness of its real sector interventions to ensure they align with long-term growth objectives and minimize unintended consequences.

iii. **Monetary Policy:** Balancing inflation control with promoting growth requires careful calibration of the Monetary Policy Rate. Understanding its long-run positive impact on growth can inform this balancing act.

iv. **Quantitative Easing:** While potentially beneficial in the long run, the use of Quantitative Easing requires careful monitoring and management to avoid potential risks and unintended consequences.

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