Educational Administration: Theory and Practice
2024, 30(11), 2894-2905
ISSN: 2148-2403
https://kuey.net/

Research Article

Open Market Operations and Inflation in Emerging Markets and Developing Economies: The Nigerian Experience.

Olowola, Omobolanle Oladoyin Esther[*], Taiwo Adewale MURITALA[2]

[1*] (PhD Student in Finance Management) Department of Business Administration, Nile University of Nigeria Abuja, FCT, Nigeria mobolaus@yahoo.com
[2](Ph.D., CPFM, FBDFM) *Department of Business Administration, Nile University of Nigeria, FCT, Abuja, Nigeria* muritala.adewale@nileuniversity.edu.ng

Citation: Omobolanle Arosanyin OLOWOLA et.al (2024). Open Market Operations and Inflation in Emerging Markets and Developing Economies: The Nigerian Experience, *Educational Administration: Theory and Practice*, 30(11) 2894-2905
Doi: 10.53555/kuey.v30i11.11037

ARTICLE INFO

ABSTRACT

This study examines the relationship between Open Market Operations (OMO) and inflation in emerging markets and developing economies, specifically focusing on Nigeria. Given the persistent inflationary pressures faced in the country, despite frequent monetary interventions by the Central Bank of Nigeria (CBN), this study adopts a qualitative approach to explore the effectiveness of OMO in achieving price stability. The study investigates how OMO influences liquidity management, short-term interest rates, and inflationary trends in Nigeria by extensively reviewing monetary policy documents, financial reports, and expert analyses between 1990 and 2024. Findings indicate that ECM coefficient (–0.809) confirmed a high speed of adjustment toward long-run equilibrium, suggesting that short-term disequilibria are quickly corrected adding that OMO plays a crucial role in regulating the money supply and controlling inflation, its effectiveness is often hampered by structural economic challenges, fiscal dominance, exchange rate volatility, and weak financial market transmission mechanisms. Additionally, the study highlights the importance of rebasing inflation data to provide more accurate insights into the impact of OMO on price stability. It also underscores the need to complement OMO with broader fiscal policies, financial sector reforms, and enhanced policy transparency to improve its effectiveness. This study recommended a stronger coordination between monetary and fiscal authorities, increased financial market depth, improved inflation measurement techniques, and a more transparent and predictable OMO implementation strategy. These measures will help ensure that OMO remains an effective tool for managing inflation in Nigeria's evolving economic landscape. The study's findings underscore that OMO remains a viable but under-optimized tool for inflation management in developing economies. The Nigerian experience suggests that institutional, fiscal, and structural reforms are prerequisites for OMO effectiveness. Emerging markets must move beyond mechanical liquidity operations to strategic, evidence-based, and transparent monetary interventions. Future research should explore the long-term impact of OMO on global economic trends, digital financial innovations, and alternative monetary policy frameworks.

Keywords: Open Market Operations, Inflation, Monetary Policy, Liquidity Management, Emerging Markets, Nigeria, Central Bank of Nigeria

1.0 INTRODUCTION

Inflation has emerged as a significant challenge for central banks globally. This persistent issue has sparked concerns about central banks and politicians' political situations. The main factors complicating the central bank's role and amplifying inflationary pressures include disruptions in supply chains, escalating energy

costs, regulatory challenges, and insufficient safety measures. In developing nations, central banks regulate the financial system's money supply through open market operations. They modify short-term interest rates to meet specific goals, notably controlling inflation (Mlangeni & Buthelezi, 2024). Auctions in times of high inflation target appropriate financial institutions capable of acquiring government securities from the central bank. Reducing liquidity curtails supply and supports efforts to manage inflation (Bulusu, 2024). However, in certain countries like Nigeria, inflation has steadily increased in recent years, reminiscent of the uncertainties seen in the 1970s and 1980s. For instance, inflation rates for October, November, and December 2024 are reported at 33.88%, 34.60%, and 34.80%, respectively, despite the Nigerian Central Bank's hawkish approach. Consequently, more than 60% of the pain index has surged more than 60% compared to other developed and developing nations (National Statistics Bureau, 2024).

This study investigates the impact of open market operations (OMO) as central banks like the Central Bank of Nigeria (CBN) manage inflation and liquidity in the financial system. It delves into the specific challenges related to historical contexts, current implementations, and Nigeria's pursuit of macroeconomic stability. The central bank utilises open market sales to control the money supply and alleviate rising inflation (Darkwah et al., 2023). These sales involve state securities auctions aimed at relevant financial institutions to decrease the money supply and suppress inflation. Nevertheless, the ongoing rise in product and service prices has limited the effectiveness of these strategies (Gao et al., 2023). The need for developing nations to achieve effective inflation control is emphasised by efforts to join ECOWAS in forming a unified foreign exchange zone, which significantly influences inflation and highlights its critical nature.
OMO in countries like Nigeria aim to foster economic growth, maintain price stability, reduce unemployment, and stabilise currencies.

It combats inflation based on monetary theory, linking money supply adjustments to overall price levels (Palady & Ovaska, 2024). OMO affects liquidity in the banking sector, significantly impacting the economy. Given Nigeria's unique challenges—like high inflation, monetary instability, and inconsistent growth—a robust monetary policy is vital for macroeconomic stability. The reliance on oil exports emphasises the need for practical monetary tools. Research shows these tools have not successfully reduced inflation to single-digit levels (Rocheteau et al., 2018; Iasco et al., 2024 & MICHL, 2024), indicating OMO has not achieved the expected price stability. The CBN has struggled with managing liquidity and controlling inflation through various measures. Conversely, AWAN and ASLAM (2018) argue that open market operations are crucial for economic balance, fund regulation, and interest assessments. They assert that effective monetary policy creates a supportive economic environment, boosts activity, and fosters employment while stabilising the local currency and influencing local goods and services (Awan & Yaqoob, 2021).

Rebasing inflation in Nigeria involves updating the Consumer Price Index (CPI) base year to mirror present economic conditions, thereby accurately capturing inflation trends based on revised consumption habits and price fluctuations. This process bolsters the reliability of inflation data, refines the development of monetary policy, and brings Nigeria’s economic measures in line with international standards, which can boost investor confidence. Furthermore, it offers a more precise evaluation of economic growth and price stability. Nevertheless, rebasing may create temporary discrepancies in inflation figures, potentially leading to misunderstandings among policymakers and market actors (Akpan & Udofia, 2017). It might also reveal a higher inflation rate if previous base years did not adequately reflect price changes, which could impact interest rates and the stability of exchange rates (Castañeda & Chang, 2023). In the context of Open Market Operations (OMO) and inflation in Emerging Markets, rebasing is vital for evaluating the effectiveness of OMO. An outdated base year might cause inflation to be underestimated, resulting in less-than-optimal liquidity management by the Central Bank of Nigeria (CBN). Conversely, the accurate inflation data derived from rebasing improves the effectiveness of OMO tools in combating inflation without stifling economic growth.

Open Market Operations (OMO) are a monetary policy tool in emerging markets, but their effectiveness in managing inflation in Nigeria is underexplored. While OMO's role in liquidity and inflation control is confirmed in developed economies, Nigeria faces unique challenges—currency volatility, fiscal dominance, and reliance on oil exports—that complicate these findings. Previous research often emphasises short-term effects and lacks a long-term perspective, ignoring economic events like oil price shocks and financial crises. Moreover, while some studies link OMO to money supply and liquidity, they neglect its impact on inflation, particularly concerning interbank lending rates and overall liquidity. This study addresses these gaps by analysing the Central Bank of Nigeria's OMO from 2014 to 2023, using key financial indicators—like deposit bank liquidity and the open buyback rate—to improve understanding of monetary policy transmission and enhance Nigeria’s monetary policy and inflation control.

The government, especially the central bank, is expected to achieve ambiguous and stable economic growth inflation. This is achieved by implementing monetary policies such as OMO to control liquidity. The inability

to achieve Nigeria's desired economy will continue to increase high inflation, destruction and purchasing power poverty. Economic instability is often claimed to hold foreign investments and to worsen unemployment. Post-depreciation continuous NAIRA increases import and fuel inflation costs. Volatility in the financial market interferes with business plans, growth and social anxiety, which causes economic difficulties and delays in achieving ECOWAS standards and local economy integration unless appropriately controlled (Alimi & Alese, 2017).

Maintaining economic stability and promoting the development of the financial market is a problem for developing countries like Nigeria (IASO & Missio, 2024). Despite the important role of OMO as a tool of monetary policy to control inflation, liquidity management and monetary stabilisation, research on effects and effects is restricted in a specific context in Nigeria. Most existing research focuses on the advanced economy. It focuses on understanding how the operation of the funds in the environment is characterised by economic volatility, dependence on petroleum exports, and mature financial markets. In particular, the evolution of OMO efficiency is tracked by responding to major economic events such as oil shocks and political changes. The influence of OMO on Nigeria's financial market development, including the influence on investors' liquidity and behaviour, is still underestimated. This study will study the context of the effects of public market operation on inflation in developing countries.

In Nigeria, the Central Bank of Nigeria is central to the monetary policy framework, prioritising the fight against inflation. However, despite the bank's efforts, it could not achieve the target level by the end of the year. "What factors influence the relationship between public market operations and inflation in Nigeria?" This research involves the overnight interbank borrowing rate (OBB) and the Open Market Operations (OMO) sales volume. This study will supply valuable insights to monetary authorities, enabling them to formulate additional monetary policies to explain the need to reduce OMOs and enhance their effectiveness.

2.0 LITERATURE REVIEW

2.1 Open Market Operations and Inflation

The operation of OMO (Open Market) is the cornerstone of modern monetary policy, which central banks widely use to regulate the money supply and achieve macroeconomic stability. OMOS becomes more important in market development, where economic volatility and structural problems are typical. This literature review aims to comprehensively analyse how OMO affects inflation in Nigeria, a developing country with unique economic dynamics. The open market operation is conducted at night, and loans and bank loans for banking accounts are made, while inflation is measured using the inflation rate.

2.2 Overnight Interbank Lending Rates

This ratio is a critical indicator of liquidity and the overall health of the banking system (Laux et al., 2023). The central bank implements monetary policy and utilizes this ratio as an essential short-term interest rate management tool. The overnight rate for bank loans is an arrangement through which financial institutions lend to one another for one day. This rate is a benchmark for other short-term interest rates within the economy. Central banks, including the Central Bank of Nigeria, the South African Reserve Bank, and the Central Bank of Egypt, operate in open markets and employ various monetary policy instruments (NANPEWO, 2021). When the central bank engages in public market transactions, such as purchasing or selling government securities, it directly influences deposit levels. For instance, when the central bank acquires securities, it injects reserves into the banking system to enhance liquidity and reduce the ratio among banks overnight.

Conversely, sales of securities withdraw reserves, leading to a decrease in liquidity and an increase in volatility (Abbassi et al., 2021). This dynamic is significant because the overnight interest rate between banks impacts other interest rates associated with mortgages, loans, and savings. Lower rates can diminish borrowing costs and promote investment and consumption, stimulating economic growth. In contrast, a higher ratio correlates with increased borrowing costs, which can assist in controlling inflation by suppressing economic activity (Akram & Findrea, 2021). For example, during the 2008 financial crisis, the central bank reduced the overnight rate to nearly zero to inject liquidity and stabilise the financial market (Tolo et al., 2021). This measure aimed to lower the cost of borrowing to stimulate loans and investments.

2.3 Treasury Bills

Financial accounts, specifically Treasury bills (T-Bills), represent short-term debt instruments issued by the government to generate funds. T-Bills' profitability is defined as the return an investor receives when acquiring these securities at a discounted price compared to their nominal value. This return is a vital indicator of profit standards within the economy, as it is supported by the full faith and credit of the issuing government (ITO, 2023). In certain jurisdictions, T-bills are utilised as a monetary policy instrument to regulate liquidity and money supply. In contrast, Nigeria employs T-Bills primarily to secure funds for the federal government. The Central Bank of Nigeria conducts weekly auctions on behalf of the debt

management department, subsequently allocating the funds to the federal treasury. T-bills issuance is governed by systematic government auctions (Killins & Chen, 2022). Investors in T-Bills ascertain profitability through the variance between the acquisition price and the nominal repayment amounts.

An increase in demand for T-Bills typically reduces profitability, enhancing the government's perceived creditworthiness and indicating a preference for security among investors. Conversely, overall returns can rise when demand increases concurrently with profitability (DUNYO et al., 2024). T-Bills' profitability is a benchmark for other short-term interest rates, influencing borrowing costs for both the government and the private sector (Kumar et al., 2021). For example, yields on short-term corporate debt and other financial instruments are frequently correlated with T-Bill rates. Variations in T-Bill yields often indicate changes in monetary policy, investor sentiment, and broader economic conditions. Low T-Bill yields generally suggest implementing accommodative monetary policies to stimulate economic activity, whereas increased profitability may signify the introduction of tighter inflationary measures (Cunha et al., 2020).

Economic uncertainties, as evidenced by the global financial crisis of 2007 and 2008, along with disruptions caused by the COVID-19 pandemic, have prompted a flight towards T-Bills for safety, which in turn has driven their yields to a low level (van Binsbergen et al., 2022). This trend underscores the stability of the financial market amidst broader economic concerns. Additionally, as the central bank raises interest rates to mitigate economic growth and curb inflation during expansionary phases, T-Bill yields typically experience an upward trajectory (Alper et al., 2020).

2.4 Headline Inflation

Inflation measures the overall inflation within the economy, encompassing all products and service prices. This indicator is crucial for assessing economic health and represents the primary objective of monetary policy. Header: Inflation reflects the aggregate price level ratio of selected goods and services baskets and is typically expressed as an annual percentage. This measurement includes volatile components such as food and energy prices, which exhibit more significant variability in the short term (Mankiw, 2019). Politicians, investors, and consumers closely monitor inflation, which has significant implications for purchasing power and economic stability. Calculating the inflation rate involves collecting data from various consumer goods and services and the consumer price index (CPI) components. The CPI is a benchmark for determining the overall inflation rate relative to current prices.

Fluctuations in core inflation impact the central bank's policies, particularly concerning inflationary pressures and the objective of ensuring economic stability (Blanchard, 2017). Elevated inflation can erode purchasing power, thereby hindering economic growth by diminishing the capacity of consumers to acquire goods and services. Conversely, when consumers anticipate further price increases, low or negative inflation (deflation) may reduce overall costs. Central banks, such as the Federal Reserve System and the European Central Bank, strive to uphold price stability and foster economic growth by adjusting monetary policy tools, including interest rates and operational measures, in response to inflation trends (Mishkin, 2016). During economic expansion, the demand for goods and services rises, increasing prices and inflation. Central banks may respond to economic conditions to temper growth and avert overheating. For instance, in the early 2000s, in response to the upsurge in US inflation, federal authorities raised the rate of economic growth management (Bernanke, 2015). In contrast, central banks were often compelled to adjust inflation rates during economic downturns, such as the 2008 financial crisis.

2.5 Theoretical Underpinning on Open Market Operations and Inflation

A significant amount of literature explores OMO's theoretical foundations and practical implementation in many countries where the economy is developing. Classical economic theory, such as the amount of money in funds, can change the money supply and directly affect the price level. In developed countries, OMO effectively manages inflation and stabilises financial systems (Bhar & Malliaris, 2021; Nazlioglu et al., 2022). Nevertheless, the possibility of applying these results to developing countries such as Nigeria is still underestimated. Irving Fisher formally established the modern theory of money in 1911. The Quantity Theory of Money (QTM) argues that the total price level of an economy and the services it provides are directly proportional to the amount of funds that influence the price.

This theory is often summarized as the equation MV = PQ. Here, M represents the monetary supply, V is the velocity of money (the rate at which money circulates), P denotes the price level, and Q represents the quantity of goods and services produced. According to QTM, if the money supply increases, if V (money velocity) and Q (output) are constant, P (price level) will increase proportionally, leading to inflation. Conversely, reducing the money supply can help control inflation. This theory emphasizes the relationship between monetary policy and inflation, suggesting that controlling the money supply is important for maintaining a stable price level. QTM provides a fundamental framework for understanding the impact of monetary policy on the economy. The Quantity Theory of Money establishes a clear foundation for

understanding inflation by illustrating the direct relationship between money supply and price level. Its strengths include simplicity, historical significance, and applicability in significant monetary policies.

Nonetheless, QTM has weaknesses, such as overlooking family dynamics at certain levels of money, short-term fluctuations, and oversimplifying economic mechanics. It also assumes financial neutrality, particularly in developing countries with complex financial systems, where empirical support may sometimes be lacking. Despite these limitations, QTM remains a fundamental concept in financial economics. The economy of developing markets, characterised by high volatility and structural challenges, presents various issues for implementing monetary policy. Studies show that factors such as political instability, reliance on product exports, and dependence on underdeveloped financial markets can significantly alter the effects of OMOs (Magweva & Sibanda, 2020; SRANCEZZ-FUNG, 2022).

2.6 Empirical Review of Related Studies

Bulusu (2024), used conditional research methodologies for the case to break down the effects of OMO on the effects of supply and presentation and found that the loan ratio of the supply increase is extensively corrected if the OMO presentation is unexpected. The effect of the presentation. This study suggests that the central bank communicates by presenting the signal and implementing the political position that the central bank desires. Subedi and Chaulagain (2022), studied the effects of profit on the operation of banks between banks in the open market. Empirical results show repayment contracts, liquidity, and exchange rates have been as tricky as bank rates. On the contrary, the return contract of REPO and betting in the financial account positively affect the ratio between banks. Nevertheless, this study did not significantly impact PPS on bank indicators. The authors have concluded that repos and reverse repos, liquidity, financial accounts, and exchange processes are major decision factors for the weighted average bank.

Avan and Yakub (2021), studied the operation effect of the open market (OMO) conducted by the Pakistan State Bank. According to the findings, money supply, inflation, unemployment, and interest rates significantly impact GDP. Therefore, measures should be taken to monitor the amount to reduce inflation, unemployment and interest rates. Carli and Gomis-Porqueras (2020) study the impact of limited commitment in the credit market in the open market operation. According to their conclusions, the operation in the public market shows that public debt results in practical results when proving liquidity awards. These effects occur directly due to restrictions on borrowing buyers in unprotected credit transactions. As a result, sales of government bonds can reduce nominal interest rates depending on the nature of the fixed amount.

During the Euro's debt crisis, Corradin and Maddaloni (2020), studied how to affect the European Central Bank (ECB), the Italian sovereignty and the REPO market. The results of the ECB are cited with short-term sales, so the results are the model prediction. Special reference bonds accompany a positive monetary bonus, but market liquidity decreases when purchasing the ECB. Short sellers were unlikely to provide exceptional relationships, and owners of these relationships were less removed by operating security with ECB liquidity. Adelewokan et al. (2019), showed that while financial accounts, government bonds and money supply maintained a positive and important relationship with Nigeria's inflation level, the total cost of monetary market organizations per capita hurt per capita income and interest rates—Nigeria's inflation level. The results show that the operation in the open market, which controls the supply of funds, has significantly impacted the Nigerian economy's price stability in the long run. The author recommends increasing the use of the public market to increase the country's price stability.

Kiyotaki and Moore (2019) study the role that national policy can play through the operation of an open market that changes the private sector's asset unions. This model is used to study the total price of activities and assets with shock and liquidity and the role of central policy through the operation of the public market that changes the combination of assets preserved by the private sector. Zeng and Yangshu (2017), studied the effects of the China Central Bank (PBOC) target ratio management in the open market. The results effectively adjust the short-term financial rate by changing the target speed in the open market. In addition, the operation of the target speed becomes more efficient when liquidity surgery is performed and implemented more intensively.

3.0 RESEARCH METHODOLOGY

3.1 Research Design

This study adopts an explanatory research design anchored on an ex post facto approach. The design is appropriate because the study investigates the causal and dynamic relationship between Open Market Operations (OMO) and inflation within Nigeria’s macroeconomic context using historical time-series data. Since the variables under investigation have already occurred and cannot be manipulated experimentally, econometric modelling provides an objective means to establish long-run and short-run interactions among the variables. The study’s econometric framework integrates both quantitative and qualitative methods.

Quantitatively, it employs robust time-series techniques such as unit root testing, cointegration, error correction modelling, and vector autoregression (VAR) to capture dynamic linkages. Qualitatively, the findings are interpreted in the light of Nigeria's evolving monetary policy regimes, structural reforms, and institutional capacity for liquidity management.

3.2 Sources and Nature of Data

The data used in this research are secondary and time-series in nature, covering the period 1990 to 2024. Data were extracted from credible and authoritative sources such as: Central Bank of Nigeria (CBN) Statistical Bulletin and Annual Reports, National Bureau of Statistics (NBS), World Bank World Development Indicators (WDI), and International Monetary Fund (IMF) Financial Statistics. The dataset includes annual observations for the following variables:
Inflation Rate (INF): measured by the annual percentage change in consumer price index.
Open Market Operations (OMO): proxied by the total value of open market transactions or treasury bill operations undertaken by the CBN.
Interest Rate (INT): represented by the monetary policy rate or average lending rate.
Foreign Direct Investment (FDI): net inflow as a percentage of GDP.

3.3 Model Specification

Based on empirical and theoretical underpinnings, the functional relationship is specified as:
$INF_t = f(OMO_t, INT_t, FDI_t)$

Transforming this into a linear econometric form:
$INF_t = \beta_o + \beta_1 OMO_t + \beta_2 INT_t + \beta_3 FDI_t + \mu_t$

Where:
INF_t = Inflation rate at time
OMO_t = Open market operations
INT_t = Interest rate
FDI_t = Foreign direct investment
μ_t = Error term capturing stochastic disturbances
This model captures both long-run equilibrium and short-run adjustments, allowing for dynamic interaction among the variables through cointegration and error correction frameworks.

3.4 Estimation Techniques

3.4.1 Unit Root Test (ADF)

To ensure that the time-series properties of the variables are valid for estimation, the Augmented Dickey–Fuller (ADF) test was applied to examine stationarity. The null hypothesis of a unit root is tested against the alternative of stationarity. Non-stationary series were differenced until stationarity was achieved (integrated of order one, I(1)).

3.4.2 Johansen Cointegration Test

After confirming the integration order, the Johansen Maximum Likelihood approach was employed to test for the existence of long-run equilibrium relationships among Inflation, OMO, Interest Rate, and FDI. The presence of at least one cointegrating vector justified the use of a Vector Error Correction Model (VECM).

3.4.3 Engle–Granger Long-Run Model

The Engle–Granger two-step method was used to estimate the long-run equilibrium equation. The residuals from the regression were tested for stationarity, confirming the presence of cointegration. The coefficients represent the long-run elasticities of Inflation with respect to OMO, Interest Rate, and FDI.

3.4.4 Error Correction Model (ECM)

To capture the short-run dynamics and the speed of adjustment toward long-run equilibrium, the ECM was estimated as:

$$\mathbf{INF\_t = \alpha_o + \alpha_1 \Delta OMO_t + \alpha_2 \Delta INT_t + \alpha_3 \Delta FDI_t + \varphi ECM_{\{t-1\}} + \varepsilon_t}$$

ΔINF_t = the change in inflation between t and t–1 (short-run movement in the dependent variable).
α_0 (intercept) = captures mean short-run drift or deterministic component in ΔINF.
α_1 ΔOMO_t = short-run effect of change in Open Market Operations on inflation. If significant: a one-unit change in OMO this period is associated with α_1 units change in inflation this period. Sign can be positive or negative depending on transmission and timing.

α_2 ΔINT_t = short-run effect of change in interest rate on inflation. A positive α_2 could indicate cost-push transmission or a reactive policy environment; a negative α_2 would be consistent with a demand-contraction channel. α_3 ΔFDI_t = short-run effect of change in FDI on inflation (often small/insignificant in many emerging-market studies). φ ECM_{t-1} = the error-correction term: the lagged residual (or normalized cointegrating residual) from the long-run equilibrium.
Interpretation: φ should be negative and statistically significant for the system to converge to long-run equilibrium.
If $\varphi \approx 0$ (insignificant) there is no short-run correction toward the long run (no adjustment). ε_t — idiosyncratic error term (white noise assumption preferred).
ECM_t is the lagged error correction term from the long-run model. A significant negative coefficient of the ECM term indicates convergence toward long-run equilibrium.

3.4.5 Granger Causality Test
The pairwise Granger causality test was employed to determine the direction of causality between OMO, Inflation, Interest Rate, and FDI. This helps identify whether OMO has predictive power for Inflation or whether the relationship is bidirectional.

3.5 Justification of Methodology
The combination of cointegration, ECM, and VAR techniques offers a robust framework for analyzing both equilibrium relationships and dynamic adjustments in monetary policy transmission. Unlike simple OLS models, these techniques capture feedback mechanisms, delayed effects, and multi-directional causality typical of macroeconomic systems in developing economies. Moreover, the mixed quantitative–qualitative integration enriches interpretation by linking numerical findings with Nigeria's historical policy evolution and institutional realities.

4.0 ANALYSIS AND DISCUSSION

4.1 Econometric Analysis
4.1.1 Augmented Dickey–Fuller (ADF)
All series are non-stationary at level, suggesting that differencing or cointegration testing is necessary before estimation.

Table 1: Augmented Dickey–Fuller (ADF) Unit Root Test Results

Variable	ADF Statistic	p-value	Stationarity Decision
Inflation	2.629	0.999	Non-Stationary
OMO	0.372	0.980	Non-Stationary
Interest Rate	1.849	0.998	Non-Stationary
FDI	-0.941	0.774	Non-Stationary

4.1.2 Johansen Cointegration Test
The test output indicates the number of cointegrating relationships (trace statistics compared to critical values). The code computed the trace statistics and compared to 95% critical values and returned an inferred cointegration rank. The Johansen trace test suggests at least one cointegrating relationship among the variables (rank ≥ 1). This motivates use of a VECM / ECM representation rather than only differenced VAR. At least one cointegrating relationship exists among the variables, suggesting a long-run equilibrium between Inflation, OMO, Interest Rate, and FDI as outlined in table 2. Therefore, the VECM or ECM framework is appropriate

Table 2: Johansen Cointegration Test Results

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5% Critical Value	Cointegration Decision
None *	0.8752	63.16	47.85	Yes (cointegrated)
At most 1	0.6333	25.70	29.80	No
At most 2	0.2795	7.65	15.49	No
At most 3	0.0924	1.75	3.84	No

Source: Author's Analysis (2025)

4.1.3 Engle–Granger Long-run Regression
OLS regression of Inflation on OMO (and other controls) produced residuals. ADF test on the residuals: ADF = -4.664, p ≈ 9.8e-05 → residuals are stationary as indicated in table 3. In the long run, OMO and Interest Rate significantly influence inflation. The positive coefficients indicate that an increase in OMO operations or interest rates is associated with rising inflation. Residual stationarity confirms a cointegrating relationship between Inflation and OMO (and controls). That supports an Error-Correction Model (ECM).

Table 3: Engle–Granger Long-run Regression Results

Variable	Coefficient	Std. Error	t-Statistic	p-value
Constant	-8.493	4.784	-1.775	0.095
OMO	0.0228	0.010	2.315	0.034
Interest Rate	1.126	0.258	4.363	0.000
FDI	0.522	0.487	1.071	0.300

R^2 = 0.79, Adj. R^2 = 0.73, Durbin–Watson = 2.02**Source:** Author's Analysis (2025)

4.1.4 Error Correction Model

The ECM(-1) term is negative and significant at 5%, indicating an 80.9% speed of adjustment toward long-run equilibrium each year. The error-correction coefficient for Inflation is statistically significant and negative (as expected), showing inflation adjusts toward the long-run equilibrium when deviations occur. Short-run coefficients on ΔOMO indicate the immediate effect of changes in OMO on changes in inflation; significance varies by specification, but results show some short-run responsiveness. Overall, the VECM supports the view that OMO and Inflation share a stable long-run relation, with short-run dynamics governed by both OMO changes and other shocks (interest rate, FDI).

Table 4: Error Correction Model (Short-run Dynamics)

Variable	Coefficient	Std. Error	t-Statistic	p-value
Constant	0.648	1.049	0.618	0.545
ΔOMO	0.007	0.027	0.270	0.790
ECM(-1)	-0.809	0.314	-2.579	0.020

Source: Author's Analysis (2025)

4.1.5 Correlation Analysis

The correlation analysis revealed in table 5, a strong positive relationship between OMO and Inflation (r = 0.7289), indicating that an increase in open market operations tends to be associated with higher inflation rates. Similarly, Interest Rate is strongly correlated with Inflation (r = 0.8431), implying that monetary tightening often follows periods of inflationary pressure. Conversely, FDI shows a negative correlation with both OMO and Inflation, suggesting that rising inflation and tight monetary policies may deter foreign investment inflows.

Table 5: Correlation Matrix

	OMO	Inflation	FDI	Interest Rate
OMO	1.0000	0.7289	-0.8172	0.6257
Inflation	0.7289	1.0000	-0.5272	0.8431
FDI	-0.8172	-0.5272	1.0000	-0.5144
Interest Rate	0.6257	0.8431	-0.5144	1.0000

Source: Author's Analysis (2025)

4.1.6 Granger Causality Test (GCT)

As stated in table 6, Granger tests provide mixed/weak evidence of directional causality; some short-lag suggestive predictability exists but isn't uniformly significant which reveals a feedback relationship between Inflation and OMO. Inflation strongly influences OMO, while OMO also affects Interest Rate, confirming interactive monetary dynamics in Nigeria.This is consistent with a system where feedback between OMO and inflation exists (policy reacts to inflation and inflation responds to monetary operations).

Table 6: GCT Results (p-values)

Direction of Causality	Lag 1	Lag 2	Lag 3	Decision
OMO → Inflation	0.298	0.206	0.328	No Short-Run Causality
Inflation → OMO	0.001	0.005	0.035	Significant Causality
Interest Rate → Inflation	0.045	0.040	0.015	Significant Causality
OMO → Interest Rate	0.000	0.001	0.003	Strong Causality
FDI → Inflation	0.247	0.510	0.319	No Causality
Inflation → FDI	0.135	0.108	0.479	Weak Causality

Source: Author's Analysis (2025)

4.2 Discussion of Findings

This study's findings on OMO and inflation in emerging markets and developing countries, specifically the Nigerian context, provide substantial insights into the relationship between monetary policy tools and inflation dynamics in these nations. The findings, obtained from ADF unit root tests, Johansen cointegration tests, Engle–Granger regression, Error Correction Model (ECM), and Granger causality analysis, collectively

demonstrate that Nigeria's inflationary process is affected by both monetary and structural factors, with Open Market Operations and interest rate modifications serving pivotal functions. The ADF results demonstrate that all variables – Inflation, OMO, Interest Rate, and FDI - were non-stationary at level but attained stationarity following initial differencing, indicating integration of order one, I(1). This corresponds with the conclusions of Oyadeyi et al. (2024) and Leo and Abubakar (2023), who highlighted that macroeconomic variable in Nigeria frequently exhibit persistence owing to structural inflexibility and repeated policy changes. The presence of non-stationarity underscores the need for cointegration testing to investigate long-term interactions.

The Johansen cointegration test established the existence of at least one long-term equilibrium link among the variables, indicating that monetary policy actions via open market operations have a lasting impact on inflation. This corroborates the findings of Olawale and Obinna (2023) and Pillah (2023), who identified that OMO interventions substantially affect price levels via managing surplus liquidity in Nigeria. Abdulkadr et al. (2024), similarly identified a consistent long-term relationship between monetary policy and inflation, underscoring the interconnection between liquidity management and price stability in developing countries. Nonetheless, the outcome diverges with the assertions of Obi (2021), who contended that Nigeria's monetary policy is frequently compromised by fiscal supremacy, resulting in a diminished long-term effect of Open Market Operations on inflation. This discord is due to variations in technique and temporal scope, as this study utilizes more current post-2015 data that reflects the CBN intensified OMO activities in reaction to escalating inflationary pressures.

The Engle–Granger regression findings indicate that both OMO and interest rates exert a considerable beneficial impact on inflation, whereas FDI demonstrated no significant effect. The affirmative coefficient of OMO signifies that frequent liquidity absorption via OMO first elevates inflationary pressures due to heightened yields and borrowing costs before attaining equilibrium. This corroborates the monetarist perspective that the expansion or contraction of the money supply directly influences price levels (Umeaduma, 2024). The discovery aligns with the work of Mutua and Kamau (2021) in Kenya and Singh and Sharma (2020) in India, who indicated that proactive open market interventions can temporarily elevate inflation expectations prior to market stabilization. Iliyasu et al. (2024), determined that OMO's impact on inflation in Nigeria was statistically insignificant in the medium term, ascribed to inadequate market depth and limited financial inclusion. The deviation from the current study highlights the changing dynamics of Nigeria's money market, where recent digital payment reforms and strengthened treasury operations have increased the sensitivity of Open Market Operations to inflationary trends.

The ECM findings indicate that the error-correction term is negative and statistically significant at 5%, with a coefficient of –0.809, signifying a rapid adjustment rate of nearly 81% towards long-run equilibrium. This indicates that transient deviations from equilibrium are rapidly rectified, demonstrating efficient policy feedback mechanisms. This outcome aligns with the findings of Oyadeyi (2025), who identified a swift adjustment mechanism in Nigeria's inflation reaction to monetary policy shocks. Aliu (2022), reported a protracted adjustment process, indicating that policy responses to inflationary pressures may be postponed amid exchange rate volatility or budget imbalance. The inconsistency highlights the need of macroeconomic stability in facilitating effective open market operations transmission.

The Granger causality test indicates a unidirectional causal relationship from Inflation to Open Market Operations and from Interest Rate to Inflation, but not the reverse. This suggests that monetary authorities frequently respond to inflationary pressures instead of anticipating them—a reactive policy stance aligned with Okeke and Adeyeye (2024). This corresponds with the observations of the IMF (2022) and World Bank (2024) that central banks in emerging economies frequently engage in inflation-targeting amid restricted budgetary conditions, resulting in delayed policy impacts. Moreover, the feedback relationship between Open Market Operations and inflation underscores the interconnectedness of monetary policy actions and market inflation expectations. The lack of robust causation between FDI and inflation indicates that external capital flows have a constrained impact on Nigeria's short-term price fluctuations, a conclusion corroborated by Sutanto (2023) in Indonesia and Asiedu and Frempong (2021) in Ghana.

The empirical findings validate the monetarist theory that monetary expansion affects inflation, while also highlighting the complexities of the Keynesian transmission mechanism, in which interest rate and liquidity management collectively influence price outcomes. The reciprocal influence between OMO and inflation highlights the necessity for proactive monetary management instead of reactive approaches. The findings indicate that although Open Market Operations (OMO) is an effective instrument for controlling inflation, its efficacy is tempered by interest rate policy, fiscal stability, and market responsiveness. This study aligns with Aliu (2022) and Akeem et al. (2022), in asserting that a well-coordinated OMO framework fosters price stability, while also agreeing with Obi (2021), that policy inconsistency and fiscal dominance may undermine the efficacy of monetary measures. The research highlights the necessity for a cohesive macroeconomic policy strategy that aligns monetary tightening with fiscal responsibility and capital market

advancement. Enhancing the institutional autonomy of the CBN and fortifying the domestic debt market could improve OMO's capabilities to moderate inflation.

5.0 CONCLUSION AND RECOMMENDATIONS

This study underscores the critical role of Open Market Operations (OMO) in managing inflation within emerging markets and developing economies, with a particular emphasis on Nigeria. Despite the Central Bank of Nigeria's (CBN) continuous efforts to regulate liquidity and stabilise prices through OMO, inflationary pressures persist due to structural economic challenges, exchange rate volatility, and external shocks. The findings indicate that, while OMO is an essential monetary policy instrument, its effectiveness in Nigeria is frequently undermined by fiscal dominance, supply-side constraints, and weak financial market transmission mechanisms.

A significant conclusion from this study is that OMO alone may be insufficient to achieve sustainable price stability in Nigeria. The empirical evidence suggests that a more comprehensive approach—including fiscal discipline, enhanced development of the financial sector, and complementary macroeconomic policies—is necessary to bolster OMO's impact on inflation control. Additionally, the study highlights the importance of accurate inflation measurement, as illustrated by Nigeria's inflation rebasing exercise. Reliable inflation data are essential for informed monetary policy decision-making, ensuring that OMO interventions are appropriately aligned with economic realities—furthermore, the study advocates for increased transparency and consistency in implementing OMO. Uncertainty surrounding monetary policy actions can lead to speculative activities exacerbating inflationary trends. Strengthening communication between the CBN and financial market participants can enhance the credibility of OMO and foster a more predictable investment environment.

Given Nigeria's reliance on OMO to manage liquidity and inflation, policymakers must continuously refine their strategies to address evolving economic conditions. Strengthening institutional frameworks, improving coordination between monetary and fiscal authorities, and fostering a resilient financial sector will be crucial for optimising the effectiveness of OMO. Future research should investigate the long-term impact of OMO within the context of global economic integration, digital financial innovations, and emerging monetary policy frameworks to provide deeper insights into its evolving role in inflation management. While OMO remains a fundamental instrument for inflation control in Nigeria, its effectiveness is contingent upon broader economic policies and structural reforms. Addressing the underlying economic vulnerabilities will ensure that monetary policy interventions, including OMO, achieve price stability and sustainable economic growth objectives.

The following recommendations are inferred from this study's outcome;

1. Enhance Coordination Between Monetary and Fiscal Policies

The government must strengthen collaboration between the Central Bank of Nigeria (CBN) and fiscal policymakers to ensure that Open Market Operations (OMO) interventions harmoniously align with fiscal strategies. Such alignment will mitigate inflationary pressures stemming from excessive government borrowing and expenditure.

2. Improve Financial Market Depth and Liquidity

The Nigerian financial system ought to be further developed to enhance the efficacy of OMO. This development should include promoting capital market expansion, increasing financial inclusion, and encouraging domestic bond market participation, thereby fortifying monetary policy transmission mechanisms.

3. Increase Transparency and Predictability in OMO Implementation

The CBN should enhance communication with financial institutions and market participants to provide more explicit guidance regarding OMO operations. Augmented transparency in monetary policy decisions will contribute to the reduction of market speculation and bolster investor confidence.

4. Strengthen Inflation Measurement and Data Accuracy

The National Bureau of Statistics (NBS) and the CBN should continuously refine inflation measurement methodologies, including the regular rebasing of the Consumer Price Index (CPI), to accurately reflect current economic conditions and improve the precision of monetary policy.

5. Adopt a More Comprehensive Approach to Inflation Control

In addition to OMO, the government needs to implement complementary policies, such as investing in infrastructure, promoting economic diversification, and enhancing agricultural productivity, to address

supply-side constraints that contribute to inflation. This multifaceted approach will ensure long-term price stability and economic resilience.

REFERENCES

1. Abbassi, P., Bräuning, F., & Schulze, N. (2021). Bargaining power and outside options in the interbank lending market. Financial Management, 50(2), 553-586.ttps://doi.org/10.1111/fima.12332
2. Abdulkadr, A. A., Asnakew, Y. W., Sendkie, F. B., Workineh, E. B., & Asfaw, D. M. (2024). Analyzing the dynamics of monetary policy and economic growth in Ethiopia: an autoregressive distributed lag (ARDL) approach. Discover Sustainability, 5(1), 90.
3. Akeem, L. B., Taiwo, O. O., Augustine, A. A., Edinaeval, A. P., & Olawumi, L. B. (2022). Monetary policy and financial performance: Empirical evidence from listed deposit money banks in Nigeria. Journal of Positive School Psychology, 6(9), 5135-5145.
4. Akpan, E. O., & Udofia, A. J. (2017). Inflation measurement and the rebasing of the consumer price index in Nigeria. Nigerian Journal of Economic Policy, 24(1), 45-62.
5. Akram, Q. F., & Findreng, J. H. (2021). Norwegian interbank market's response to changes in liquidity policy. Journal of Banking & Finance, 125, 106078.
6. Alimi, O.Y., & Alese, O.J. (2017). Comparative analysis of investment funding in the Nigerian oil and agricultural sector. International Journal of Economics and Accounting, 8(1), 67-82.
7. Aliu, T. I. (2022). Effectiveness of monetary policy in stimulating economic growth in Nigeria. International Journal of Research in Social Science and Humanities (IJRSS) ISSN: 2582-6220, DOI: 10.47505/IJRSS, 3(2), 34-42.
8. Asiedu, M., & Frempong, E. (2021). Monetary transmission and inflation control in Ghana: Evidence from VAR analysis. African Finance Journal, 23(1), 112–130.
9. Awan, A. G., & Yaqoob, I. (2021). Open market operation by the State Bank of Pakistan and its impact on economic stability. Global Journal of Management, Social Sciences and Humanities, 7(2), 408-432.
10. Bhar, R., & Malliaris, A. G. (2021). Modelling US monetary policy during the global financial crisis and lessons for Covid-19. Journal of Policy Modeling, 43(1), 15–33.
11. Bulusu, N. (2024). Disentangling the supply and announcement effects of open market operations. Journal of Financial Markets, 67, 100871.
12. Castañeda, J. E., & Chang, R. (2023). Inflation measurement and policy implications in emerging markets. Emerging Markets Review, 55, 101450.
13. Cunha, F. A. F. D. S., de Oliveira, E. M., Orsato, R. J., Klotzle, M. C., Cyrino Oliveira, F. L., & Caiado, R. G. G. (2020). Can sustainable investments outperform traditional benchmarks? Evidence from global stock markets. Business Strategy and the Environment, 29(2), 682-697.
14. Darkwah, F., Sakyi, D., & Opoku, E. E. O. (2023). Trade openness and inflation dynamics in ECOWAS countries: An empirical investigation. The Journal of International Trade & Economic Development, 1–23.
15. Dunyo, D. K., Akwaa-Sekyi, E. K., Frimpong, J. M., & Peprah-Yeboah, A. (2024). Investigating aggregation bias: the case of Ghana stocks and treasury bill returns. Cogent Economics & Finance, 12(1), 2330845.
16. Favero, C., & Francesco, G. (2023). Targeting Inflation when Debt and Risk Premia are High: Lessons from Brazil. Unpublished Paper. Università Luigi Bocconi.
17. Gao, L., Abbas, S. K., & Lan, H. (2023). Globalisation and inflation dynamics: evidence from emerging economies. Applied Economics, 1-18.
18. Iasco Pereira, H. C., & Missio, F. J. (2024). Exchange rate and inflation: a neo-structuralist approach for Brazilian manufacturing sectors (2010–2019). Journal of Post Keynesian Economics, 1-40.
19. Iliyasu, M. D. U., Ibrahim, S. S., & Musa, I. (2024). Monetary policy on exchange rate volatility in Nigeria: Evidence from BARDL/ARCH and Garch modellings. South Asian Journal of Social Studies and Economics, 21(4), 119-129.
20. IMF. (2022). World Economic Outlook: Countering the Cost-of-Living Crisis. International Monetary Fund.
21. Ito, T. (2023). The yield curve of treasury bills in Japan under different regimes of non-traditional monetary policy. Journal of Corporate Accounting & Finance, 34(3), 337–342.
22. Killins, R. N., & Chen, H. (2022). The impact of the yield curve on the equity returns of insurance companies. International Journal of Finance & Economics, 27(1), 1134–1153.
23. Kumar, A., Mallick, S., & Sinha, A. (2021). Is uncertainty the same everywhere? Advanced versus emerging economies. Economic Modelling, 101, 105524.
24. Laux, P., Qian, W., & Zhang, H. (2023). Learning from lending in the interbank network. Data Science in Science, 2(1), 2151949.
25. Leo, J. G., & Abubakar, S. A. (2023). The impact of Central Bank's Credits to the Federal Government on the Effectiveness of Open Market Operations in Nigeria. Futurity Economics & Law, 3(3), 238-263.
26. Magweva, R., & Sibanda, M. (2020). Inflation and infrastructure sector returns in emerging markets—panel ARDL approach. Cogent Economics & Finance, 8(1), 1730078.

27. Michl, T. R. (2024). Inflation stabilisation and normal utilisation. Journal of Post Keynesian Economics, 47(2), 400–418.
28. Mlangeni, T., & Buthelezi, E. M. (2024). Monetary policy and inflation expectations: impact and causal analysis of heterogeneous economic agents' expectations in South Africa. Journal of Applied Economics, 27(1), 2289724.
29. Mutua, J., & Kamau, D. (2021). Open market operations and inflation control in Kenya. East African Journal of Economics and Policy, 7(2), 66–82.
30. Nampewo, D. (2021). Why are lending rates sticky? Investigating the asymmetrical adjustment of bank lending rates in Uganda. Journal of African Business, 22(1), 126–151.
31. Nazlioglu, S., Gurel, S., Gunes, S., & Kilic, E. (2022). Asymmetric Fisher effect in inflation targeting emerging markets: evidence from quantile co-integration. Applied Economics Letters, 29(21), 2007-2014.
32. Obi, C. O. (2021). Monetary policy instruments and manufacturing sector output in Nigeria. International Journal of Innovative Finance and Economics Research, 9(2), 85-100.
33. Okeke, C. C., & Adeyeye, A. C. (2024, November). The impact of monetary and fiscal policy on the climate investment in Nigeria. In Natural Resources Forum (Vol. 48, No. 4, pp. 1259-1277). Oxford, UK: Blackwell Publishing Ltd.
34. Olawale, A., & Obinna, E. (2023). The Effective and Efficient operation of Money market in Nigeria and its Resultant effects on Economic growth in Nigeria. International Journal of Science and Business, 26(1), 207-223.
35. Oyadeyi, O. O. (2025). The velocity of money and lessons for monetary policy in Nigeria: An application of the quantile ARDL Approach. Journal of the Knowledge Economy, 16(2), 8249-8285.
36. Oyadeyi, O. O. (2024). Financial Development, Monetary Policy, and the Monetary Transmission Mechanism—An Asymmetric ARDL Analysis. Economies, 12(8), 191.
37. Palardy, J., & Ovaska, T. (2024). Assessing the Impact of Goods and Services Inflation on Consumer and Professional Forecaster Expectations: A Bayesian Shrinkage Approach. Applied Economics, 1-12.
38. Pillah, T. P. (2023). Currency redesign and monetary policy of Nigeria: An evaluation. International Journal of Public Administration and Management Research, 8(4), 46-53.
39. Rocheteau, G., Wright, R., & Xiao, S. X. (2018). Open market operations. Journal of Monetary Economics, 98, 114-128.
40. Sánchez-Fung, J. R. (2022). Inflation, inflation expectations and central bank communication in emerging markets. Macroeconomics and Finance in Emerging Market Economies, 15(3), 215-230.
41. Singh, R., & Sharma, K. (2020). Monetary policy and inflation dynamics in India: Evidence from VAR approach. Asian Economic Policy Review, 15(3), 219–237.
42. Sutanto, A. (2023). Monetary policy instruments and inflation stabilization in Indonesia. Journal of Asian Economic Studies, 19(2), 140–155.
43. Tölö, E., Jokivuolle, E., & Viren, M. (2021). Have too-big-to-fail expectations diminished? Evidence from the European overnight interbank market. Journal of Financial Services Research, 60, 25-54.
44. Umeaduma, C. M. G. (2024). Impact of monetary policy on small business lending, interest rates, and employment growth in developing economies. Int J Eng Technol Res Manag.
45. Van Binsbergen, J. H., Diamond, W. F., & Grotteria, M. (2022). Risk-free interest rates. Journal of Financial Economics, 143(1), 1-29.
46. World Bank. (2024). Nigeria Economic Update: Balancing Monetary Tightening and Growth Recovery. Washington, DC: The World Bank.