International Journal of Accounting Research, 10(1),2025, 53-58
ISSN: 2617-9954
Open Access Journal

International Journal of Accounting Research

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

Monetary and fiscal policy coordination in Nigeria

Hamisu Ali [*1], Oluwaseun Adeniran Sunday[2], Alfred Gideon Gaya[3]

[1,3]*Department of Economics, Faculty of Social and Management Science, Adamawa State University, Mubi-Nigeria*
[2]*Federal University Wukari, Taraba, Faculty of Social Science, Department of Economics, Taraba State, Nigeria*
Corresponding Author: hamisu682@adsu.edu.ng

ABSTRACT

Macroeconomic policy aims to achieve sustainable, inflation-free growth. These measures include monetary and fiscal policies. The Central Bank of Nigeria (CBN) employs monetary instruments. The variables are economic growth (EG) as measured by gross domestic product, money supply (MS), real interest rate (RIR), monetary policy rate (MPR), government expenditure (GS), and financial deepening (FD). This research uses annual time series data from 1985 to 2023. Using the auto-regressive distributed lag (ARDL) model, a long-run link between independent and dependent variables was discovered. The ARDL bounds testing results reveal that the money supply (MS) and real interest rate (RIR) have a beneficial effect on economic growth. Monetary policy rates (MPR) and financial deepening (FD) have a detrimental impact on Nigeria's economic growth. The study was based on the Mundell-Fleming Model (1960). Based on our findings, we recommend that the government increase the money supply gradually to stimulate economic activity without causing inflation, keep real interest rates low to encourage borrowing for productive investments while keeping inflation in mind, and implement policies to improve financial inclusion and deepen the financial sector, including expanding access to banking services and credit facilities for SMEs.

ARTICLE INFO

Keywords:
ARDL, Coordination, Fiscal Policy, Monetary

JEL code: E52, E58, O23

Received: 20 Feb 2025 | Accepted: 19 Apr 2025
Published: 25 May 2025

1. INTRODUCTION

Monetary and fiscal policy coordination is a crucial aspect of economic management in any country, including Nigeria. Both monetary and fiscal policies play significant roles in influencing key economic variables such as inflation, unemployment, and economic growth. Monetary policy, controlled by the central bank, involves the regulation of money supply, interest rates, and credit in the economy to achieve specific goals. On the other hand, fiscal policy, managed by the government, deals with taxation, public spending, and borrowing to influence the overall demand and supply conditions in the economy. In Nigeria, like many other developing economies, achieving effective coordination between these two policies has been a challenging endeavor (Chuku, 2016). The complexities arise due to various factors, such as conflicting objectives, political considerations, and differences in the time lags of policy implementation. The country's authorities strive to strike a balance between controlling inflation and promoting economic growth while also ensuring fiscal sustainability. However, these goals often seem to be at odds with each other, leading to difficulties in policy coordination (Tarawalie *et al.*, 2013).

Moreover, Nigeria has experienced periods of macroeconomic instability, characterized by high inflation, exchange rate volatility, and budget deficits. The lack of adequate policy coordination during these times has exacerbated the challenges faced by the economy. Consequently, there is a growing recognition of the need for better synchronization between monetary and fiscal policies to achieve macroeconomic stability and sustainable economic growth (Goshit & Landi, 2014). Historically, Nigeria has faced instances where monetary and fiscal policies were not effectively coordinated, leading to adverse consequences for the economy. For instance, in the past, expansionary fiscal policies were pursued without appropriate monetary policy support, leading to high inflation rates and currency devaluation (Taylor, 2017). On the other hand, during periods of fiscal contraction, tight monetary policies were not adequately complemented, leading to reduced economic growth and employment. In light of these challenges, policymakers in Nigeria are increasingly emphasizing the importance of better policy coordination to achieve their economic goals. Improved coordination would involve closer communication and cooperation between the central bank and the government to ensure that monetary and fiscal policies work in harmony to achieve common objectives (Oboh & Ajibolade, 2017). This paper aims to explore the challenges of monetary and fiscal policy coordination in Nigeria, analyzing past experiences and suggesting potential solutions. By understanding the factors that have hindered effective policy coordination in the past, it is possible to develop strategies to enhance coordination and promote macroeconomic stability and sustainable economic growth in Nigeria (Goshit & Landi, 2014). The objective of the study is; to evaluate the effectiveness of current monetary and fiscal policy coordination mechanism in achieving macroeconomic stability in Nigeria. The rest of the paper is presented under five headings.

2. THEORETICAL REVIEW

2.1 The Mundell-Fleming Model

The Mundell-Fleming model, developed independently by economists Robert Mundell and Marcus Fleming in the early 1960s, stands as a foundational framework for comprehending the intricate relationships between exchange rates, interest rates, and fiscal policy in open economies. This model holds particular relevance for countries like Nigeria, where the economy is significantly influenced by international trade and capital movements (Mundell, 1963).

Components of the Mundell-Fleming Model: At its core, the Mundell-Fleming model dissects the impact of fiscal and monetary policies on exchange rates in open economies. The exchange rate, a pivotal variable, is shaped by the interplay of domestic and foreign interest rates. The model introduces the concept of the J-curve effect, suggesting that in the short run, a currency depreciation may initially worsen the trade balance before ultimately improving it. Moreover, the model delves into the relationship between domestic and foreign interest rates, emphasizing the role of interest rate differentials in influencing capital flows and, consequently, the exchange rate. Fiscal policy, encompassing changes in government spending and taxation, is another critical element in the model. It explores how fiscal expansion or contraction can impact output, employment, and the trade balance.

Relevance to Nigeria: For a country like Nigeria, characterized by an open economy heavily reliant on oil exports and international trade, the Mundell-Fleming model provides essential insights. The model's application is evident in understanding how changes in fiscal and monetary policies can reverberate through Nigeria's external sector, affecting exchange rates and trade balances. Given Nigeria's dependence on foreign investment and capital flows, the model's consideration of capital mobility is particularly pertinent. Shifts in interest rates, influenced by monetary policy, play a crucial role in determining the attractiveness of domestic assets compared to foreign assets, thereby impacting capital movements.

Policy Trade-Offs: The Mundell-Fleming model illuminates the inherent trade-offs that policymakers confront. Balancing domestic objectives like full employment and stable prices with external goals such as a favorable trade balance requires thoughtful consideration. Policymakers in Nigeria, grappling with the challenges of managing an open economy, must navigate these trade-offs as they formulate and implement monetary and fiscal policies

2.2 Crowding Out and Crowding In Effects Theory

Crowding out, a central concept in macroeconomics, occurs when increased government borrowing exerts upward pressure on interest rates, potentially diminishing private sector investment. This phenomenon is rooted in the competition for loanable funds, as government demand for financing competes with the private sector in financial markets. Higher interest rates resulting from increased government borrowing can deter private investment, as businesses face elevated borrowing costs. The crowding-out effect was notably explored by Robert Barro in his seminal work in 1974, where he emphasized the negative correlation between government spending and private investment, positing that elevated government spending today could lead to higher taxes in the future, further hindering private sector investment. Conversely, crowding in posits that increased government spending can stimulate private sector investment, particularly during economic downturns. Olivier Blanchard and Stanley Fischer's 1989 model delves into this perspective, suggesting that in certain economic conditions, heightened government spending can positively impact output and encourage private investment. This crowding-in effect becomes more pronounced when the economy operates below full capacity and increased government spending fills the demand gap. These concepts of crowding out and crowding in are pivotal for policymakers, especially in the realm of fiscal policy. In periods of economic expansion, crowding may dominate, leading to reduced private sector investment (Akram et al., 2023). However, during economic contractions, the crowding-in effect can play a crucial role in stimulating economic activity. Understanding these dynamics aids policymakers in crafting nuanced fiscal policies that consider the economic context and potential repercussions on private sector behavior.

2.3 Ricardian Equivalence Theory

Ricardian equivalence, a theory introduced by the eminent economist David Ricardo in 1820, fundamentally challenges the traditional view of fiscal policy effectiveness. At its core, this theory suggests that individuals are forward-looking and rational economic agents who, when faced with the prospect of future tax increases resulting from expansionary fiscal policies, adjust their behavior accordingly. Specifically, individuals are expected to increase their savings rather than boost current consumption, effectively offsetting the intended simulative effects of fiscal policy changes. The key assumption underlying Ricardian equivalence is that individuals recognize that government spending increases or tax cuts today may be financed by future taxes. In anticipation of these future tax obligations, rational individuals adjust their behavior by saving more, understanding that the temporary increase in disposable income is, in essence, a loan from the government that will need to be repaid in the future. The implications of Ricardian equivalence challenge the traditional Keynesian view, which suggests that fiscal policy changes, such as increased government spending or tax cuts, can stimulate economic activity by boosting aggregate demand. In the Ricardian equivalence framework, the anticipated future tax burden associated with fiscal expansion leads individuals to act in a way that neutralizes the intended impact of the policy. In practical terms, if individuals believe that a tax cut is temporary and will be followed by future tax increases to cover the government debt incurred, they are likely to save the extra income rather than spend it. This behavior can result in limited or no net increase in overall consumption, counteracting the intended purpose of the fiscal stimulus.

2.4 Theoretical Framework

The Mundell-Fleming Model is highly relevant for studying monetary and fiscal policy coordination in open economies like Nigeria due to its emphasis on the interactions between exchange rates, interest rates, and fiscal policy. Nigeria's engagement in international trade and capital flows aligns with the model's focus on global economic dynamics. The model provides insights into how fiscal and monetary policies influence economic variables within the context of international economic interactions. While assuming perfect capital mobility, a factor that may require careful consideration in the Nigerian context, the model's relevance depends on the responsiveness of exchange rates and interest rates to policy changes. The Mundell-Fleming Model, therefore, serves as a valuable theoretical framework for guiding policy discussions and decision-making, offering a comprehensive understanding of the complexities inherent in open economies.

The Mundell-Fleming model is based on the equations:

The IS curve:

$$Y = C + I + G + NX \quad (1)$$

Where NX is net exports

The LM curve:

$$\frac{M}{P} = L(i, Y) \quad (2)$$

A higher interest rate or a lower income (GDP) level leads to lower money demand

The BoP (Balance of Payments) Curve:

$$BoP = CA + KA \quad (3)$$

where BoP is the balance of payments surplus, CA is the current account surplus and KA is the capital account surplus.

IS components

$$C = C(Y - T), i - E(\pi)) \quad (4)$$

where $E(\pi)$ is the expected rate of inflation. Higher disposable income or a lower real interest rate (nominal interest rate minus expected inflation) leads to higher consumption spending.

$$I = I(i - E(\pi), Y_{t-1}) \quad (5)$$

where Y_{t-1} is GDP is the previous period. Higher lagged income or a lower real interest rate leads to higher investment spending.

$$NX = NX(e, Y, Y^*) \quad (6)$$

where NX is net export, e is the nominal exchange rate (the price of foreign currency in terms of units of the domestic currency) Y is GDP and Y^* is the combined GDP of countries that are foreign trade partners. Higher domestic income (GDP) leads to more spending on imports and hence lower net export higher foreign income leads to higher spending by foreigners on the country's export and thus higher next export. A higher e leads to higher net exports.

Balance of payment (BoP) components:

$$CA = NX \quad (7)$$

where CA is the current account and NX is net export. That is the current account is viewed as consisting solely of import and exports.

$$KA = z(i - i^*) + k \quad (8)$$

where i^* is the foreign interest rate k is the exogenous component of financial capital flows z is the interest-sensitive component of capital flows and the derivative of the function z is the degree of capital mobility (the effect of differences between domestic and foreign interest rates upon capital flows KA).

Exchange Rate expectations:

The Mundell–Fleming model assumes perfect substitutability between domestic and foreign securities, predicting equalization of domestic and world interest rates through arbitrage. However, this assumption doesn't align with the observed reality where world interest rates often differ from domestic rates. Dornbusch (1976) introduces the consideration of exchange rate expectations, recognizing that these expectations influence actual exchange rates. This departure from perfect substitutes acknowledges the real-world complexity and emphasizes the role of expectations in shaping interest rates and exchange rate dynamics, challenging the simplicity of the initial model.

$$i = i^* + \frac{e'}{e} - 1 \quad (9)$$

and if the elasticity of expectation σ, is less than unity, then we have;

$$\frac{di}{de} = \sigma - 1 < 0 \quad (10)$$

since domestic output is $y = E(i, y) + T(e, y)$, the differentiation of income with regard to the exchange rate becomes.

$$\frac{dy}{de} = \frac{\partial E}{\partial i}\frac{di}{de} + \frac{\partial E}{\partial y}\frac{dy}{de} + \frac{\partial T}{\partial e} + \frac{\partial T}{\partial y}\frac{dy}{de} \quad (11)$$

$$\frac{dy}{de} = \frac{1}{1 - E_y - T_y}\left(E_i \frac{di}{de} + T_e\right) \quad (12)$$

The standard IS-LM theory gives us the following basic relations:

$$E_i < 0, E_y = 1 - s > 0 \quad (13)$$

$$T_e > 0, T_y = -m < 0 \quad (14)$$

Investment and consumption increase as the interest rates decrease and currency depreciation improves the trade balance

$$\frac{dy}{de} = \frac{1}{s+m}\left(E_i \frac{di}{de} + T_e\right) \quad (15)$$

$$\frac{dy}{de} = \frac{1}{s+m}\left(E_i(\sigma - 1) + T_e\right) \quad (16)$$

Then, the total differentiations of trade balance and the demand for money are derived.

$$dT = \frac{\partial T}{\partial e}de + \frac{\partial T}{\partial y}dy = T_i de + T_y dy \quad (17)$$

$$dL = \frac{\partial L}{\partial i}di + \frac{\partial L}{\partial y}dy = L_i di + L_y dy \quad (18)$$

$$L_i < 0, L_y > 0 \quad (19)$$

and then, it turns out that,

$$\frac{dT}{dL} = \frac{T_e(s+m)+T_y(E_i(\sigma-1)+T_t)}{L_i(\sigma-1)+(s+m)+L_y(E_i(\sigma-1)+T_e)} \quad (20)$$

$$\frac{dT}{dL} = \frac{T_e s+T_y E_i(\sigma-1)}{L_i(\sigma-1)(s+m)+L_y(E_i(\sigma-1)+T_e)} \quad (21)$$

The Mundell–Fleming model's predictions regarding the impact of monetary policy on the trade balance in the short run. It suggests that a monetary expansion, despite potentially worsening the trade balance, remains effective due to its ability to lower interest rates and stimulate spending. This departure from the traditional model is attributed to the introduction of exchange rate expectations, a factor overlooked by Mundell–Fleming. Additionally, the short-run effectiveness of fiscal policy is emphasized, with Dornbush highlighting its impact on interest rates and the velocity of money. The overall message underscores the complexity of economic dynamics, incorporating exchange rate expectations and acknowledging the multifaceted effects of both monetary and fiscal policies on the economy.

2.5 Challenges in Coordination (Time Lag in Monetary and Fiscal Policies)

(a)Monetary Policy Time Lag: Monetary policy involves actions by the central bank, such as adjusting interest rates or money supply, to achieve specific economic goals. One significant challenge is the recognition that changes in monetary policy do not have an immediate impact on the economy. This phenomenon is known as the time lag in monetary policy.

Implementation Lag: The time it takes for policymakers to recognize the need for a policy change and actually implement it can be lengthy. Decision-making processes, data collection, and analysis contribute to this lag.

Recognition Lag: There is a delay in identifying changes in the economic environment that necessitate a policy response. For example, by the time policymakers recognize the emergence of inflationary pressures, sometime has already passed.

Impact Lag: Even after a policy change is implemented, it takes time for the adjustment to influence economic variables. For instance, changes in interest rates may take several months to affect consumer spending, investment decisions, or inflation rates.

(b)Fiscal Policy Time Lag: Fiscal policy involves changes in government spending, taxation, and borrowing to influence the economy. Similar to monetary policy, fiscal policy experiences time lags that affect its effectiveness.

Recognition Lag: Identifying the need for fiscal policy changes, such as increased government spending during a recession, may take time. Economic data and indicators need to be analyzed before policymakers can make informed decisions.

Implementation Lag: Once the decision is made, there is a delay in implementing fiscal policy changes. The bureaucratic process of enacting legislation, allocating funds, and initiating projects contributes to this lag.

Impact Lag: The full impact of fiscal policy on the economy is not immediate. For example, an infrastructure spending program may take time to stimulate economic activity and create jobs.

(c)Challenges in Coordination

Synchronization Difficulty: Coordinating monetary and fiscal policies becomes challenging when both policies operate with time lags. If monetary policy reacts quickly to changing economic conditions, but fiscal policy takes longer to adjust, a temporal misalignment may occur, leading to inefficiencies in achieving economic objectives (Blanchard, 2019). In a study by Romer and Romer (2017), the authors emphasize the importance of synchronization between monetary and fiscal policies for optimal outcomes. The study suggests that effective coordination requires a mutual understanding of the timing of policy impacts and collaborative efforts to align their implementation.

Immediate Economic Adjustments: In situations requiring rapid economic adjustments, such as during a financial crisis or sudden economic downturn, the inherent time lags in both monetary and fiscal policies can limit their effectiveness. During such crises, quick and coordinated responses are essential to prevent prolonged periods of economic instability and mitigate the negative impacts on employment and output (Alesina, et al. 2019). The lag in fiscal policy adjustments, including the time needed for legislative processes and resource allocation, can exacerbate the challenges. This highlights the importance of having mechanisms in place to facilitate swift policy adjustments during times of economic urgency.

2.6 2.2.5Stylized facts on fiscal and monetary policy coordination in Nigeria

A review of the Nigerian monetary policy framework: The Central Bank of Nigeria (CBN) has played a pivotal role in shaping and implementing monetary policy since its establishment in 1958 (CBN, 2011a). Over the years, the CBN has employed two major frameworks to guide its monetary policy initiatives: exchange rate targeting, operational from 1959 to 1973 and the subsequent adoption of monetary targeting since 1974 (CBN, 2011a). The shift to monetary targeting was largely driven by the collapse of the fixed exchange rate regime of the Bretton Woods System. Under the monetary targeting framework, the CBN focuses on the use of direct or indirect instruments to control monetary aggregates, emphasizing regular monitoring of these aggregates, effective liquidity management, coordination between fiscal and monetary authorities, and consistent communication with key stakeholders (CBN, 2011a; Tarawalie et al., 2013).

An overview of the Nigeria's fiscal policy framework: Nigeria's fiscal policy is intricately linked to the inherent volatility of oil export earnings, with oil and gas acting as the primary drivers of the country's export revenues (Baunsgaard, 2003). The susceptibility of the domestic economy to fluctuations in oil prices is evident in the direct relationship between the volume of public expenditure and accrued oil revenues; the precarious nature of this dependence underscores the impact of any shifts in oil earnings on government revenue and expenditure. In response to increased oil revenue inflows, government fiscal operations have expanded significantly, with approximately four-fifths of government revenue derived from oil (Iwayemi, 2009). The overarching goals of Nigeria's fiscal policy include promoting macroeconomic growth, ensuring debt sustainability, and augmenting public sector revenue. To enhance fiscal sustainability and the quality of public expenditure, two critical legislations, namely the Fiscal Responsibility Act (FRA) of 2007 and the Public Procurement Act of 2007, have been enacted at the federal level (Usman, 2007). The FRA, in particular, has revolutionized the budgetary process by introducing a medium/long-term fiscal planning horizon, incorporating variables such as the fiscal oil price rule, GDP growth rate, exchange rate, inflation rate, and fiscal account balance into the annual budget formulation. These legislative measures represent crucial steps toward fortifying Nigeria's fiscal framework, fostering long-term economic growth, and mitigating the impact of oil price volatility on government finances.

2.7 Literature Review

Empirical studies on the coordination between monetary and fiscal policies in Nigeria from 1980 to 2018 reveal a complex and often weakly aligned relationship between the two policy frameworks, with significant implications for macroeconomic stability. Chuku (2016), utilizing a state-space model with Markov switching and time series data from 1980 to 1994, identified a negative coordination trend, where monetary and fiscal policies failed to complement each other. His study notably highlighted fiscal dominance, suggesting that fiscal policy exerted stronger influence over monetary outcomes, challenging the traditional view that monetary policy is solely responsible for inflation control. Oboh (2017), in a broader study spanning 1981 to 2015, quantified the overall coordination level at a low 17 percent, though he observed increased coordination (36.4 percent) during periods of economic stress, such as low growth and high inflation. However, no such coordination was evident during periods of simultaneous economic and inflationary expansion, underscoring the inconsistency in policy interactions and the need for stronger institutional collaboration.

Further insights into the implications of policy coordination emerge from Lawal et al. (2018), who examined the impact of both policies on the Nigerian stock market using ARDL and EGARCH models. Their findings indicated a significant long-term relationship between the Nigerian All-Share Index (ASI) and the combined effects of monetary and fiscal policies, particularly in influencing market volatility. This emphasizes the importance of a comprehensive approach to managing financial market fluctuations. Nyiputen et al. (2023) extended the analysis by assessing the impact of policy coordination on economic development using time series data from 1980 to 2018, applying multiple regression analysis and a state-space model with Markov switching. Anchored in monetary and Keynesian theories, their results confirmed the critical role of policy coordination in fostering economic stability, once again pointing to fiscal dominance in Nigeria's policy landscape. Collectively, these studies stress the importance of cohesive and synchronized fiscal and monetary strategies in achieving sustainable economic growth and resilience in Nigeria (Chuku, 2016; Oboh, 2017; Lawal et al., 2018; Nyiputen et al., 2023).

2.8 Literature Gap

The literature on Nigeria's monetary and fiscal policy coordination highlights significant insights and gaps. Chuku (2016) identifies negative coordination and fiscal dominance from 1980 to 1994, challenging the view that monetary factors primarily drive inflation. Oboh (2017) extends the analysis to 1981-2015, finding weak overall coordination but better alignment during low growth and high inflation periods, without addressing structural factors. Lawal et al. (2018) reveal a long-term relationship between policy interactions and stock market performance, emphasizing the need for a comprehensive policymaking approach, yet focusing mainly on financial markets. Nyiputen et al. (2023) confirm fiscal dominance and the critical role of policy coordination for economic stability from 1980-2018, using traditional regression techniques. Gaps remain in understanding long-term trends, institutional influences, broader macroeconomic impacts, and dynamic policy interactions, suggesting the need for extended analyses and advanced econometric methods.

3. METHODOLOGY

3.1 Data Description and Source

Annual time series data from World Bank Indicators (WDI, 2023), is used in the study, which covered the period of (1985-2023). Variables includes; Economic growth, Money supply, Real interest Rate, Monetary Policy Rate, Government Spending and Financial Development are considered in this study, which Economic Growth (EG) being the dependent variables, proxied by GDP (constant LCU); money supply (% of GDP); Real interest rate (RIR); Monetary policy rate (MS); Government Spending (GS) and Financial Deepening (FD).

Table 1: Description of Variables

Variables	Definition	Source
Economic Growth (EG)	Economic growth is an increase in the production of goods and services in an economy	World Development Indicators (WDI, 2023)
Money Supply (MS)	The money supply is the total amount of money cash, coins, and balances in bank accounts in circulation	World Development Indicators (WDI, 2023)
Real Interest Rate (RIR)	Real interest rate is the lending interest rate adjusted for inflation as measured by the GDP deflator	World Development Indicators (WDI, 2023)
Monetary Policy Rate (MPR)	Monetary policy is the control of the quantity of money available in an economy and the channels by which new money is supplied.	World Development Indicators (WDI, 2023)
Government Spending (GS)	Money spent by the public sector on the acquisition of goods and provision of services.	World Development Indicators (WDI, 2023)
Financial Deepening (FD)	The ratio of broad money to nominal gross domestic product	Central Bank of Nigeria (CBN, 2023)

Source: Author Compilation (2024)

3.2 Model Specification

In order to analyze monetary and fiscal policy coordination in Nigeria, following the study of Nyiputen et al. (2023), Oboh (2017), and Esu and Atan (2017), We proposed autoregressive distributed lags (ARDL), developed by Pesaran, et al. (2001). The ARDL was adopted because of its flexibility to discover long-run and short-run dynamic relationships between variables, its efficiency in a small size, and, most importantly, the distinct levels of integration 1(0) and I (1). The model is as follows:

The functional form of the model is specified as;

$$EG = f(MS, RIR, MPR, GS, FD) \ldots \ldots \ldots \ldots (22)$$

Equation 22 is transformed into an econometric model as;

$$EG = \beta_0 + \beta_1 MS_t + \beta_2 RIR_t + \beta_3 MPR_t + \beta_4 GS_t + \beta_5 FD_t + \varepsilon_t \ldots \ldots \ldots (23)$$

Transformed equation (23) to the ARDL specification as;

$$\Delta lnEG_t = \theta_0 + \theta_1 lnEG_{t-1} + \alpha_1 lnMS_{t-1} + \alpha_2 lnRIR_{t-1} + \alpha_3 lnMPR_{t-1} + \alpha_4 lnGS_{t-1} + \alpha_5 lnFD_{t-1} + \sum_{i=1}^{b} \beta_1 \Delta lnEG_{t-1} + \sum_{i=1}^{b} \beta_2 \Delta lnMS_{t-1} + \sum_{i=1}^{b} \beta_3 \Delta lnRIR_{t-1} + \sum_{i=1}^{b} \beta_4 \Delta lnMPR_{t-1} + \sum_{i=1}^{b} \beta_5 \Delta lnGS_{t-1} + \sum_{i=1}^{b} \beta_6 \Delta lnFD_{t-1} + \varepsilon_t \ldots \ldots \ldots (24)$$

The first part of the equation without Δ indicates long-run dynamics while the second part with Δ indicates the short-run dynamics. The bound testing approach is utilized to establish cointegration among the variables before estimating the equation. To estimate the short-run adjustment to equilibrium we specify the Error Correction Model (ECM) in equation 25 as follows;

$$\Delta \ln EG_t = \theta_0 + \sum_{i=1}^{b} \beta_1 \Delta \ln EG_{t-1} + \sum_{i=1}^{b} \beta_2 \Delta \ln MS_{t-1} + \sum_{i=1}^{b} \beta_3 \Delta \ln RIR_{t-1} + \sum_{i=1}^{b} \beta_4 \Delta \ln MPR_{t-1} + \sum_{i=1}^{b} \beta_5 \Delta \ln GS_{t-1} + \sum_{i=1}^{b} \beta_6 \Delta \ln FD_{t-1} + \delta ECM_{t-1} + \varepsilon_t \ldots \ldots \ldots (25)$$

Where, the speed of adjustment of the parameters for the long run equilibrium following a shock to the system is δ, and the error correction model is $ECMt{-}1$.

Where; Economic Growth (EG) proxy by Gross Domestic Product; Money Supply (MS), Real Interest Rate (RIR), Monetary Policy Rate (MPR), Government Spending (GS) and Financial Development (FD) β_0 Intercept Coefficient β_1 to β_6 Parameters to be estimated ε Error term. 0 is set equally for all firms in the common constant form.

4. RESULT AND PRESENTATION

Table 2: Descriptive Statistics

	EG	MS	RIR	MPR	GS	FD
Mean	31.30	28.58	2.42	2.57	26.72	0.19
Median	31.22	28.38	4.31	2.60	25.82	0.18
Maximum	34.64	43.51	18.18	3.25	34.51	0.27
Minimum	30.47	23.86	-31.45	1.81	18.48	0.12
Std. Dev.	0.75	3.48	9.55	0.27	3.03	0.03
Skewness	2.18	1.80	-1.21	-0.37	-0.11	-0.09
Kurtosis	10.76	9.60	5.56	4.01	3.24	2.49
Jarque-Bera	129.12	92.04	20.32	2.58	0.19	0.47
Probability	0.00	0.00	0.00	0.27	0.90	0.78
Sum	1220.95	1114.76	94.55	100.58	1042.46	7.45
Sum Sq. Dev.	21.61	462.41	3472.41	2.79	351.17	0.04
Observations	39	39	39	39	39	39

Source: Author Compilation (2024)

Table 2; the statistics provided describe a dataset consisting of six variables: Economic Growth (EG), Money Supply (MS), Real Interest Rate (RIR), Policy Rate (MPR), Government Spending (GS), and Financial Deeping (FD). There are 39 observations for each. Looking at EG for example, the mean is 31.30, suggesting that the data points are around this value on average. The median of 31.22 indicates that the mean value of the dataset is slightly lower than the mean, indicating a right-skewed distribution. The minimum of 30.47 and maximum of 34.64 further highlight this skewness, with the data tending towards higher values. The standard deviation of 0.75 is relatively small, suggesting that the data points are tightly clustered around the mean. However, the skewness value of 2.18 and kurtosis of 10.76 indicate a significant deviation from normal distribution, with heavy tails and significant skewness to the right. The Jarque-Bera test confirms this deviation from normal distribution, and the p-value of 0.00 indicates a highly significant difference. These statistics provide a comprehensive understanding of the distribution and characteristics of the EC variables in the dataset.

Table 3: Unit Root Result

Variables	ADF		PP	
	Level	1st Diff.	Level	1st Diff.
Economic Growth (EG)	-1.20	-0.47	-1.28	-0.53
Money Supply (MS)	-1.70	-0.02	-2.24	-0.03
Real Interest Rate (RIR)	-3.96**	-16.62***	-4.06**	-8.37***
Monetary Policy Rate (MPR)	-2.69	-6.80***	-2.75	-6.81***
Government Spending (SP)	-6.68***	-12.58***	-1.55	-11.65***
Financial Deepening (FD)	-2.50	-5.73***	-4.14**	-5.11***

Source: Author compilation Eview 10, (*) significance at 10%, (**) significance at 5% and (***) significance at 1% respectively *(2024)*

Table 4.3 presents the results of both the Augmented Dickey-Fuller (ADF) and Phillip-Perron (PP) tests. Based on the condition that the bound test is based on the assumption that variables are either integrated into I(1) or I(0) or a combination of both, it is mandatory to check for the stationarity of the data series to be used for analysis. This is also essential in order to avoid obtaining an unbiased estimation. However, the summary of the results reveals that all the variables, such as the real interest rate (RIR), government spending (SP), real interest rate (RIR), and financial deepening (FD), are statistically significant at this level. Real interest rate (RIR), monetary policy rate (MPR), government spending (GS), and financial depth (FD) are stationary after first being different in both ADF and Phillip Perron (PP), as such; the appropriate estimation to be employed is the autoregressive distributed lag (ARDL) model.

Table 4: Bound F-test for Cointegration

Test Statistic	Value	K
F-Statistic	5.07	5
	Critical Value Bound	
Significant Level	I(0) Bound	I(1) Bound
10%	2.08	3
5%	2.39	3.38
2.5%	2.7	3.73
1%	3.06	4.15

Source: *Author Compilation (2024)*

Table 4 displays the results of the ARDL-bound test for cointegration. Comparing the value of the calculated f-statistics with the critical value bounds is the first stage in this process. Table 4 shows that the estimated f-statistic of 5.07, evaluated at k = 5 (number of explanatory variables), at the 5 percent level of significance, surpasses the upper critical boundaries, the null hypothesis that there is no long-run relationship between the variables, which is thus rejected. This suggests that the variables have a long-run relationship.

Table 5: Result of Estimated Long-run Coefficients using ARDL Approach

ARDL Model (1, 0, 0, 0, 0, 0, 1) Selected Automatically based on AIC
Dependent Variable: Economic Growth (EG)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
MS	0.26	0.07	3.48	0.00***
RIR	0.02	0.02	1.21	0.23
MPR	-0.60	0.56	-1.07	0.29
GS	0.02	0.04	0.44	0.65
FD	-6.81	6.37	-1.06	0.29
C	25.96	1.73	15.03	0.00***

R^2=0.99, DW=1.50

Source: Author computation Eview 10, (*) significance at 10%, (**) significance at 5% and (***) significance at 1% respectively (2024)

Table 5 present the long-run ARDL estimated model, the long-run estimated show that economic growth (EG) is positively affected by money supply (MS) and significant at 1 percent significant level, especially, it shows that a 1 percent increase in money supply will result in approximately 0.26 percent increase in economic growth in Nigeria, that money supply impacts long-term economic growth by facilitating investment and consumption and lowering interest rates. Our finding is in line with the study of Nyiputen et al. (2023) and Mishchenko et al. (2019), which found that before starting to enact fiscal measures, the government at its own ends should focus on monetary operations, contrary to the study of Oboh (2017), which found that there was no evidence of coordination during the period of high GDP growth and inflation in Nigeria. Our finding are in line with the finding of Hanif and Arby (2003) in Pakistan there was no concept of such policy coordination before financial sector reform which were initiated in 1989-1990. The value of Durbin-Watson (1.50) which fall between the range of the acceptable value of DW is greater than R^2 (99%) means that the model is adequate and not spurious. The scoefficient of determination is R^2 is 0.99 indicating that about 99% of the variation of monetary and fiscal coordination in Nigeria was explained by the variable controlled in the model between the 1985 to 2023 while the remaining 1% were explained by other variable not captured in the model, which is represented by the noise.

Table 6: Result of Estimated Short-run Coefficients using ARDL Approach

ARDL Model (1, 0, 0, 0, 0, 0, 1) Selected Automatically based on AIC
Dependent Variable: Economic Growth (EG)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LMS)	0.22	0.00	37.90	0.00***
D(RIR)	0.00	0.00	2.13	0.04**
D(LMPR)	-0.01	0.03	-0.23	0.81
D(LGS)	0.00	0.00	0.62	0.53
D(FD)	-0.88	0.41	-2.13	0.04**
CointEq(-1)	-0.09	0.02	-3.34	0.00***

Source: Author computation Eview 10, (*) significance at 10%, (**) significance at 5% and (***) significance at 1% respectively (2024)

Table 6 shows the short-run estimate of the ARDL model, and the fact the fact that our variables are cointegrated provides support for the use of an error correction model (ECM) to investigate the short-run dynamics. The result showed that the money supply (MS) has a positive and statistically significant impact on the present rate of economic growth (EG). In particular, a 1 per cent increase in economic growth in the previous year increased EG in Nigeria by 22 per cent. This is statistically significant at the 1 per cent level of significance. Comprise with the long-run results: the short-run money supply has a positive and significant effect on economic growth at the 1 per cent level. he percentage increase in the real interest rate (RIR) will increase economic growth (EG) in the short run and is statistically significant at the 5 per cent level. This can encourage saving and lead to a pool of savings that can be channelled into productive investments such as infrastructure projects, research and development, and capital expenditure. On the other hand, it can reduce inflationary pressure when RIR increases and borrowing becomes more expensive. The result on financial deepening (FD) showed that FD had a significant negative effect on economic growth (EG) over the period at 1 percent. Implying that a rise in FD by 1 percent will result in a decrease in EG by 88 percent. This can lead to financial instability in Nigeria, misallocation of resources, increased inequality, discouraging saving, distorting the financial market, weakening the currency, and impacting long-term investment and saving planning. Finally, the ECM result shows that the speed of adjustment to equilibrium in the dynamics model after disturbance is (-0.09), implying that in the long run, 90 percent of the short-run disequilibrium in economic growth is corrected.

Table 7: Diagnostic Test Result

Test	Coefficient	P-Value
Serial Correlation LM Test	1.08	0.35
Residual Heteroskedasticity Test	1.25	0.30

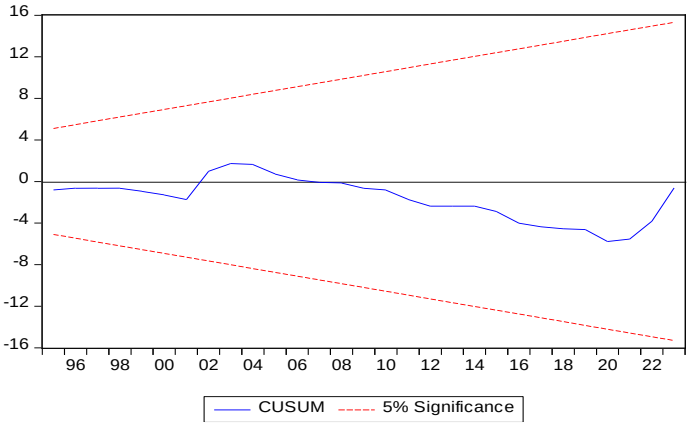
Source: Author computation Eview 10 (2024)

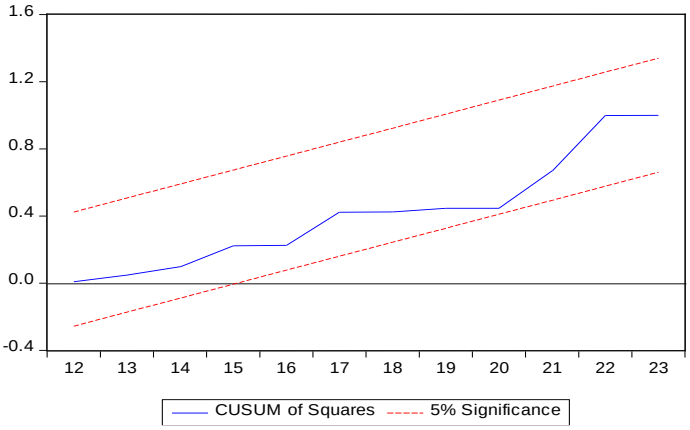
As presented in table 7 there is no evidence for post-estimated diagnostic test problem in the model. The serial correlation langrange multiplier (LM) test indicates the evidence of no serial correlation with the coefficient of 1.08 with P-value of 0.35. The Breusch-Pagan-Godfrey Test (BP) for heteroskedasticity test shows that the disturbance term in the model is homoscedastic with the coefficient of 1.25 with P-value of 0.30 and thus, the ARDL model is correctly specified given all the P-value are greater than 0.5% level of significance.

4.1 Cumulative Sum of Recursive Residuals of CUSUM and CUSUM Square

Model stability is crucial for prediction and economic inference, representing a sufficient condition. Therefore, the study conducted stability tests for estimated parameters by employing the cumulative sum

of recursive residuals (CUSUM) and cumulative sum of square (CUSUMS Q) tests. The graphical presentation of these tests is depicted in Figures 1 and 2.





5. CONCLUSION AND RECOMMENDATIONS

We examined the impact of monetary and fiscal policy coordination in Nigeria. According to the ARDL estimation, the money supply (MS) and real interest rate (RIR) have a positive impact on economic growth. While monetary policy rate (MPR) and financial deepening (FD) have a negative impact on economic growth in Nigeria, effective monetary and fiscal policy coordination should focus on the following recommendations: the government should increase the money supply in a controlled manner to stimulate economic activities without causing inflation, keep real interest rates at supportive levels to encourage borrowing for productive investments while being mindful of inflation, and implement policies to enhance financial inclusion and deepen the financial sector, expanding access to banking services and credit facilities for SMEs.

REFERENCES

Alesina, A., Barbiero, O., Favero, C., Giavazzi, F., & Paradisi, M. (2017). *The effects of fiscal consolidations: Theory and evidence* (No. w23385). *National Bureau of Economic Research*.

Akram, M. W., Hafeez, M., Kaium, M. A., Zahan, I., Ahmed, D., Salahodjaev, R. (2023). Eco-innovation and Environmental Entrepreneurship: Steps towards Business Growth. *Environmental Science and Pollution Research, 30*, 63427–63434. https://doi.org/10.1007/s11356-023-26680-4

Barro, R. J. (1974). Are Government Bonds Net Wealth? *Journal of Political Economy, 82*(6), 1095–1117.

Blanchard, O. (2019). Public debt and low interest rates. *American Economic Review*, *109*(4), 1197-1229.

Blanchard, O., & Fischer, S. (1989). Lectures on Macroeconomics. MIT Press.

Chuku, C. A. (2016). *Evaluating monetary policy options for managing resource revenue shocks when fiscal policy is laissez-faire: Application to Nigeria* (No. 2016/45). WIDER Working Paper.

Dornbusch, R. (1976). "Exchange Rate Expectations and Monetary Policy". Journal of International Economics. 6 (3): 231–244.

Esu, G. E., & Atan, J. A. (2021). The Coordination of Monetary and Fiscal Policy Interactions and Its Impact on the Performance of the Nigerian Economy. *The International Journal of Business & Management*, *9*(3). 229-245

Fleming, J. M. (1962). Domestic Financial Policies under Fixed and under Floating Exchange Rates *Staff Papers-International Monetary Fund*, 369-380.

Goshit, G. G., & Landi, J. H. (2014). Monetary and Fiscal Policy Interactions and Limitations: The Need for Policy Coordination for Macroeconomic Outcomes in Nigeria. *LWATI: A Journal of Contemporary Research*, *11*(3), 56-72.

Hanif, M. N., & Arby, M. F. (2003). Monetary and fiscal policy coordination. 1-10

Mishchenko, S., Naumenkova, S., Mishchenko, V., Ivanov, V., & Lysenko, R. (2019). Growing discoordination between monetary and fiscal policies in Ukraine. *Banks and Bank Systems*, *14*(2), 40.

Mundell, R. A. (1963). Capital mobility and stabilization policy under fixed and flexible exchange rates. *Canadian Journal of Economics and Political Science/Revue canadienne de economiques et science politique*, *29*(4), 475-485.

Nyiputen, I. R., Abijia, O. P., & Chinedu, O. A. (2023). Fiscal and Monetary Policies Coordination and Economics Growth in Nigeria. *European Journal of Science, Innovation and Technology*, *3*(3), 69-85.

Nyiputen, I. R., Abijia, O. P., & Chinedu, O. A. (2023). Fiscal and Monetary Policies Coordination and Economics Growth in Nigeria. *European Journal of Science, Innovation and Technology*, *3*(3), 69-85.

Oboh, C. S., & Ajibolade, S. O. (2017). Strategic management accounting and decision making: A survey of the Nigerian Banks. *Future Business Journal*, *3*(2), 119-137.

Oboh, V. U. (2017). Monetary and fiscal policy coordination in Nigeria: a set theoretic approach. *Academic Journal of Economic Studies*, *3*(1), 48-58.

Pesaran, M. H., Shin, Y., & Smith, R. J. (2001). Bounds testing approaches to the analysis of level relationships. *Journal of applied econometrics*, *16*(3), 289-326.

Ricardo, D. (1821). *On the principles of political economy*. London: J. Murray.

Romer, C. D., & Romer, D. H. (2018). Phillips lecture–why some times are different: Macroeconomic policy and the aftermath of financial crises. *Economica*, *85*(337), 1-40.

Tarawalie, A. B., Sissoho, M., Conte, M., & Ahortor, C. R. (2013). *Fiscal and monetary policy coordination in the WAMZ: Implications for member states' perfromance on the convergence criteria* (No. 4). WAMI Occasional Paper Series.

Taylor, R. M. (2017). Situational awareness rating technique (SART): The development of a tool for aircrew systems design. In *Situational awareness* (111-128). Routledge.