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# INTEREST RATE TRANSMISSION, CAPITAL MARKET DEVELOPMENT, AND ECONOMIC GROWTH IN NIGERIA: EVIDENCE FROM A STRUCTURAL VAR FRAMEWORK

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**Abstract** *This study examined the dynamic relationships among interest rate transmission, capital market development, and economic growth in Nigeria using a Structural Vector Autoregression framework. Employing annual data spanning 1996 to 2024, the analysis incorporated unit root and Zivot Andrews structural break tests, followed by Vector Autoregression estimation with optimal lag (2) selection. The findings indicated that economic growth responded negatively and persistently to interest rate shocks, confirming the contractionary effect of monetary tightening, with interest rate innovations accounting for approximately 28 percent of long run growth variability. Capital market development exerted a weak but delayed positive influence on economic growth, contributing less than 3 percent to growth fluctuations, suggesting that the transmission of financial market development to the real economy remained limited. Inflation initially declined following interest rate shocks but subsequently rebounded, reflecting delayed pass through and structural rigidities within the economy. Overall, the findings revealed asymmetric and evolving transmission dynamics, underscoring the need for complementary structural reforms to strengthen monetary policy effectiveness and deepen capital market development in support of sustainable economic growth. The study contributed to the literature by integrating capital market development into a macroeconomic monetary transmission framework, thereby providing new evidence on the interaction between financial market development, monetary policy, and economic growth in Nigeria.*

**Keywords** Capital market development, Economic Growth, Interest Rate Transmission, Monetary policy, Structural VAR

## 1. Introduction

Monetary policy transmission remains one of the most debated and empirically contested areas in modern macroeconomics, particularly within emerging and resource dependent economies where structural rigidities, financial market imperfections, and institutional constraints complicate policy outcomes. In principle, changes in interest rates are expected to influence investment decisions, capital market activities, and ultimately aggregate economic growth through well established transmission channels. However, in practice, particularly in economies such as Nigeria, this transmission mechanism has remained uneven and often weak, raising concerns about whether monetary policy adjustments effectively stimulate financial market development and broader macroeconomic performance. Nigeria's macroeconomic environment has been characterised by persistent inflationary pressures, volatile interest rates, exchange rate instability, and evolving financial sector conditions, all of which have complicated the predictability and effectiveness of monetary policy transmission.

Recent contributions to monetary economics have increasingly recognised the importance of financial market development in shaping macroeconomic responses to policy actions. Rather than viewing capital markets merely as passive recipients of monetary policy signals, studies such asAbramova et al. (2022) and Oyadeyi (2024) demonstrated that the depth and efficiency of financial markets significantly influenced the transmission of monetary policy to the real economy. According to Sofiyan (2024) and Barrio (2024) capital market development promotes resource mobilisation, improves liquidity, and supports efficient capital allocation. This helps in strengthening the transmission of interest rate adjustments that impacts economic activity. At the same time, inflation has remained a vital determinant of transmission effectiveness. As noted by Ihimoyan et al. (2022), and Famubode and Ali (2024), persistent inflation distorts relative prices and weakens the reactivities of financial markets and investment decisions to monetary policy mediation.

Despite these developments, theoutcomes from empirical studies from developing economies, within Sub-Saharan Africa in particular, has remained dominated by aggregate macroeconomic analyses. Thus, limited attention has been directed on the role of capital market development within the monetary transmission mechanism. Studies focusing on Nigeria, including Ayodeji and Oluwole (2018), and Afolabi and Wapji (2024), primarily employed conventional econometric techniques and reported mixed evidence regarding the effectiveness of interest rate policy in stimulating economic growth. Although these studies provided valuable insights, they did not specifically examined how capital market development interacted with monetary policy transmission or do they adequately captured the dynamic relationships among key macroeconomic variables. Similarly, Mishra et al. (2012) and Oyadeyi(2025) highlighted the limitations of monetary transmission in developing economies but gave relatively minimal attention to the role of financial market development in strengthening policy effectiveness. Consequently, important

questions remained regarding the extent to which capital market development promotes or hinders the transmission of monetary policy to economic growth within the Nigerian context.

The implications of this gap are significant asweak transmission of monetary policy through underdeveloped capital markets can constrain investment. This will further reduce financial intermediation and limit the ability of monetary authorities to boost sustainable economic growth. In Nigeria, these challenges have manifested in frequency of macroeconomic instability and volatile investment conditions regardless of periodic monetary policy adjustments. These considerations highlighted the need for an integrated analytical framework that jointly examined interest rate transmission, capital market development, and economic growth to provide a more comprehensive understanding of monetary policy effectiveness.

In this context, this study examined the dynamic relationship between interest rate transmission, capital market development, and economic growth in Nigeria using a Structural Vector Autoregression framework. Unlike previous studies that focused primarily on direct monetary policy effects, the study incorporated capital market development into the monetary transmission process, thereby extending the existing literature on the interplay between financial market development and macroeconomic performance. The study therefore contributed by providing new empirical evidence on how capital market development determine the effectiveness of monetary policy transmission within a developing economy that is marked by persistent macroeconomic volatility and evolving financial markets. The findings were expected to provide useful insights for monetary authorities, financial regulators, and policymakers seeking to strengthen financial market development and enhance sustainable economic growth in Nigeria.

The remainder of the paper is structured as follows. The section 2 reviews the relevant theories, while section 3 focused on literature review, followed by the methodology and model specification in section 4. The section 5 presents the empirical results and discussion, while the section 6 concludes with policy implications and directions for future research.

## 2. Theoretical Review

### 2.1 New Keynesian Monetary Transmission Theory

The New Keynesian Monetary Transmission Theory provides the principal theoretical foundation for explaining the relationship among interest rates, capital market development, and economic growth. Rooted in the seminal work of Clarida et al. (1999), the theory emphasises the roles of nominal rigidities, rational expectations, and imperfect competition in shaping the effectiveness of monetary policy (Galí, 2018; Woodford, 2011). It argued that prices and wages adjust gradually rather than instantaneously, allowing central bank interest rate decisions to influence real economic variables. These includes investment, output, and aggregate demand, over the short to medium term. Within this framework, the interest rate serves as the primary monetary policy instrument through

which macroeconomic stability and economic activity are regulated.

In the context of this study, the theory suggests that changes in policy interest rates influence the cost of capital, investment decisions, and the performance of capital markets, which subsequently affect economic growth. Well developed capital markets facilitate efficient mobilisation and allocation of financial resources, improve liquidity, and strengthen the transmission of monetary policy by enhancing the responsiveness of investment to changes in interest rates. Conversely, shallow or underdeveloped capital markets weaken this transmission mechanism by limiting access to long term finance, reducing investment efficiency, and constraining economic expansion. Consequently, the degree of capital market development determines the extent to which monetary policy actions are transmitted to the real economy.

A major strength of the New Keynesian framework lies in its incorporation of expectations and forward looking behaviour, which are particularly relevant in economies characterised by macroeconomic uncertainty. However, its application to Nigeria remains constrained by structural challenges, including financial market imperfections, persistent inflationary pressures, and relatively low capital market depth, which may weaken the effectiveness of monetary policy transmission. Nevertheless, the theory provides a robust foundation for analysing the dynamic interaction between interest rate transmission, capital market development, and economic growth within the Structural VAR framework adopted in this study.

### 2.2 Capital Market Development Theory

Capital Market Development Theory provides a complementary theoretical perspective by explaining how the depth, efficiency, and liquidity of financial markets influence investment, resource allocation, and economic growth. The theory is rooted in the seminal contributions of McKinnon (1973) and Shaw (1973), who argued that well developed financial markets promote efficient mobilisation of savings, improve capital allocation, and stimulate productive investment. Subsequent contributions by Levine (1997) further established that capital market development enhances economic performance by reducing transaction costs, improving liquidity, facilitating risk diversification, and strengthening the allocation of financial resources to productive sectors.

Within the context of this study, the theory explains how capital market development complements the monetary transmission mechanism. Changes in policy interest rates influence financing conditions and investor behaviour, while the effectiveness of these adjustments depends partly on the level of capital market development. Efficient and liquid capital markets improve the responsiveness of investment and private sector financing to monetary policy by expanding access to long term capital and facilitating the reallocation of financial resources. Conversely, shallow or underdeveloped capital markets weaken monetary transmission by limiting investment opportunities, reducing financial intermediation, and constraining economic growth. Consequently, capital market

development serves as an important transmission channel through which monetary policy influences real economic activity.

A major strength of Capital Market Development Theory lies in its ability to explain the interaction between financial market development and macroeconomic performance within both developed and emerging economies. However, its application to developing countries such as Nigeria is constrained by structural challenges, including limited market depth, relatively low investor participation, weak market liquidity, and periodic macroeconomic instability. Despite these limitations, the theory provides a robust conceptual foundation for examining the dynamic relationship among interest rate transmission, capital market development, and economic growth within the Structural VAR framework adopted in this study.

### 2.3 Macroeconomic Instability and Dynamic Adjustment Perspective

The Macroeconomic Instability and Dynamic Adjustment Perspective extends traditional linear macroeconomic models by recognising that economic relationships evolve over time in response to structural changes, policy shifts, and external shocks. Unlike static frameworks that assume constant relationships, this perspective acknowledges that interactions among macroeconomic and financial variables adjust continuously as economic conditions change, making it particularly relevant for emerging economies characterised by volatility and persistent structural challenges.

Within the context of this study, the perspective provides the analytical foundation for examining how macroeconomic instability influences the relationship between interest rate transmission, capital market development, and economic growth. Under relatively stable macroeconomic conditions, monetary policy is expected to transmit more effectively through financial markets. However, this will enable interest rate adjustments to stimulate investment, capital market activities leading to economic growth. Conversely, periods of high inflation, exchange rate volatility, and economic uncertainty distort price signals, weaken investor confidence, and reduce the responsiveness of capital markets to monetary policy interventions. Consequently, the effects of interest rate changes on capital market development and economic growth are likely to vary over time depending on prevailing macroeconomic conditions (Caldara et al., 2016;Idris, 2019; Dufrénot, 2023).

A key strength of this perspective lies in its ability to explain evolving economic relationships and structural adjustments that characterised developing economies such as Nigeria. It is particularly relevant in environments where recurrent macroeconomic shocks, inflationary pressures, and financial market fluctuations influence the effectiveness of monetary policy. However, the framework does not explicitly identify the underlying sources of structural change and therefore requires empirical models capable of capturing dynamic interactions among economic variables. In this regard, the Structural Vector Autoregression framework adopted in this study provides an appropriate empirical approach for analysing the dynamic interplay among interest rate transmission, capital market development, and economic growth within Nigeria's evolving macroeconomic environment.

## 3. Literature Review

The relationship among interest rate transmission, capital market development, and economic growth has received considerable scholarly attention within the broader discourse on monetary policy effectiveness, particularly in emerging economies characterised by structural rigidities and macroeconomic volatility. Existing studies generally assumed that monetary policy operates through efficient interest rate channels that influence borrowing costs, investment decisions, financial market performance, and ultimately economic growth (Dufrénot, 2023; Alazaki and Okumus, 2024). However, this assumption has often proved weak in developing economies such as Nigeria, where shallow capital markets, institutional constraints, and financial market imperfections disrupt the expected transmission mechanism. Consequently, growing attention has been directed towards understanding how capital market development influences the effectiveness of monetary policy in stimulating sustainable economic growth.

Early empirical studies, including Mishra et al. (2012), argued that underdeveloped financial systems constituted the principal constraint to effective monetary transmission in developing economies by limiting financial intermediation and access to long term finance. Similarly, Delcey and Sergi (2023) assumed relatively efficient financial markets and rational expectations in explaining interest rate dynamics. Although these studies provided valuable macroeconomic insights, they paid limited attention to the role of capital market development as an important transmission channel. This study differed from these perspectives by explicitly incorporating capital market development into the monetary transmission framework, thereby extending conventional analyses beyond the banking sector.

Recent empirical evidence has increasingly recognised the importance of financial market development in strengthening monetary policy effectiveness. Chen et al., (2023) and Olusegun (2025) demonstrated that monetary policy shocks affected investment and financing conditions through financial market channels, while Mahmood et al. (2022) revealed that financial market development significantly influenced the responsiveness of investment and economic activity to policy interventions. Although these studies advanced understanding of monetary transmission, they were conducted primarily within advanced economies characterised by relatively mature financial markets. Consequently, their findings may not be directly applicable to Nigeria, where capital markets remain relatively shallow and macroeconomic volatility persists. This study therefore extended the existing literature by examining these relationships within a developing economy using a Structural Vector Autoregression framework.

Within the African context, studies such as Salahuddin and Gow (2016) and Ayooluwade, et al. (2025) largely assumed stable linear relationships among macroeconomic variables and relied on conventional time series estimation techniques. While these approaches generated useful empirical evidence, they

were limited in capturing the dynamic interactions among monetary policy, capital market development, and economic growth. This study differed by employing a Structural Vector Autoregression framework, which permitted the identification of structural shocks and provided a more comprehensive interpretation of dynamic policy transmission within the Nigerian economy.

The literature on capital market development, including Levine (1997), Mishra et al. (2012), and Sofiyan (2024), generally suggested that deeper and more efficient capital markets promote savings mobilisation, improve resource allocation, facilitate investment, and enhance long term economic growth. However, these studies rarely examined how capital market development interacted with monetary policy transmission to influence aggregate economic performance. This separation reflected a broader limitation in the literature, where monetary policy and capital market development were frequently examined independently rather than as complementary components of the macroeconomic transmission process. This study addressed this gap by integrating capital market development into the analysis of interest rate transmission and economic growth within a unified empirical framework.

Emerging studies examining inflation dynamics, includingHeise et al. (2019). Schnabel(2022), and Ihimoyan et al. (2022), argued that inflation volatility weakened monetary policy transmission by distorting price signals, increasing uncertainty, and discouraging investment. Although these studies provided important insights into the macroeconomic environment, they gave relatively limited consideration to the role of capital market development in moderating these effects. This suggested that the interaction among inflation, financial market development, and monetary policy transmission remained insufficiently explored, particularly within developing economies.

The literature also revealed notable contradictions regarding the effectiveness of interest rate transmission in promoting macroeconomic performance. While some studies reported strong transmission effects, others found weak or statistically insignificant relationships, especially in developing economies (Ndekwu, 2013; Fedorova & Meshkova,2021; Abramova et al., 2022). These inconsistencies suggested that existing models remained incomplete because they often overlooked the contribution of capital market development in facilitating monetary policy transmission. Furthermore, many studies focused either on macroeconomic aggregates or financial market development independently, resulting in fragmented evidence on their interaction.

Thus, existing studies largely adopted either a monetary policy perspective or a financial market development perspective, with limited integration of the two. This study departed from the existing literature by combining interest rate transmission, capital market development, and economic growth within a unified Structural Vector Autoregression framework. In doing so, it addressed an important gap by providing a more comprehensive understanding of how monetary policy interacted with capital

market development to influence economic growth in Nigeria.

## 4. Methodology

This study employed a Structural Vector Autoregression (SVAR) framework to examine the dynamic relationship among interest rate transmission, capital market development, and economic growth in Nigeria using annual data spanning 1996 to 2024 obtained from the World Development Indicators (2024). The analytical framework was anchored on the New Keynesian Monetary Transmission Theory, Capital Market Development Theory, and the Macroeconomic Instability and Dynamic Adjustment Perspective, which collectively explain how monetary policy, financial market development, and macroeconomic conditions influence economic performance. Economic growth, measured by the annual growth rate of gross domestic product, served as the dependent variable, while interest rate, proxied by the monetary policy rate, and capital market development, measured by market capitalisation of listed domestic companies as a percentage of gross domestic product, constituted the principal explanatory variables. Inflation, exchange rate, financial development, and government expenditure were included as control variables. A priori, interest rate, inflation, and exchange rate were expected to exert negative effects on economic growth, whereas capital market development, financial development, and government expenditure were expected to exert positive effects. The SVAR framework was adopted because it identifies contemporaneous relationships and distinguishes exogenous monetary policy shocks from endogenous macroeconomic responses, thereby producing economically interpretable impulse responses and dynamic interactions that conventional VAR and static regression models cannot adequately capture (Sims, 1980; Kilian & Lütkepohl, 2017; Boubaker & Mouna, 2024).

Table 1: Variable Definitions and Measurement

| Variable | Symbol | Measurement / Proxy | Definition | Expected Relationship |
|---|---|---|---|---|
| **Economic Growth** | **GDP** | Real GDP growth (annual %) | Measures the annual percentage change in real gross domestic product, reflecting the overall performance of the economy. | — |
| **Interest Rate** | **IR** | Monetary Policy Rate (%) | Represents the policy interest rate set by the Central Bank to influence borrowing costs, investment, and aggregate demand. | **Negative** (higher interest rates reduce economic growth) |
| **Capital Market Development** | **CMD** | Market Capitalisation of Listed Domestic Companies (% of GDP) | Measures the size and depth of the capital market relative to the economy, reflecting its capacity to mobilise long term finance and support | **Positive** (greater market development promotes economic growth) |

| Variable | Symbol | Measurement / Proxy | Definition | Expected Relationship |
|---|---|---|---|---|
| | | | investment. | |
| **Inflation** | **INF** | Inflation, Consumer Prices (annual %) | Measures the annual percentage increase in the general price level, reflecting macroeconomic stability and purchasing power. | **Negative** (higher inflation constrains economic growth) |
| **Exchange Rate** | **EXR** | *Real Effective Exchange Rate (Index)* | Captures the value of the domestic currency relative to foreign currencies, influencing external competitiveness and investment. | **Negative** (exchange rate instability may weaken growth) |
| **Financial Development** | **FD** | Domestic Credit to Private Sector (% of GDP) | Measures the extent of financial intermediation through credit provision to the private sector, indicating financial sector development. | **Positive** (greater financial development enhances investment and growth) |
| **Government Expenditure** | **GEXP** | Government Final Consumption Expenditure (% of GDP) | Represents public sector spending on goods and services, reflecting the fiscal policy stance and its contribution to aggregate demand. | **Ambiguous** (may stimulate or crowd out private investment depending on efficiency) |

**Source:** Author's compilation based on the **World Development Indicators (2024).**

### 4.1 Model for the Analysis

The empirical analysis begins with an augmented linear model that establishes the fundamental relationship among the variables:

$$GDP_t = \vartheta_0 + \vartheta_1 IR_t + \vartheta_2 CMD_t + \vartheta_3 INF_t + \vartheta_4 EXR_t + \vartheta_5 FD_t + \vartheta_6 GEXP_t + \mu_t \quad (1)$$

In Eq.(1) above, $GDP_t$ represents economic growth measured by real gross domestic product growth rate, $IR_t$ denotes the monetary policy rate, $CMD_t$ captures Market Capitalisation of Listed Domestic Companies, and $INF_t$reflects inflation. The control variables include exchange rate $EXR_t$ financial development $FD_t$ and government expenditure $GEXP_t$, while $\mu_t$ denotes the stochastic error term.

### 4.2 Structural VAR Model with Identification Restrictions

To disentangle causal relationships and identify structural monetary policy shocks, this study employed a Structural Vector Autoregression (SVAR) model specified as:

$$A_0 Y_t = A(L) Y_{t-1} + \mu_t \quad (2)$$

From Eq. (2), $Y_t = [GDP,IR,CMD,INF,EXR,FD,GEXP]'$ represents the vector of endogenous variables, where $A_0$ is a matrix of contemporaneous relationships, $A(L)=A_1L + A_2L^2+,...A_tL^t$ is a lag polynomial capturing dynamic interactions, and $\mu_t$ represents orthogonal structural shocks. This compact representation integrates both the dynamic structure and contemporaneous interactions, while retaining the flexibility of the expanded VAR formulation.The SVAR framework was grounded in the New Keynesian Monetary Transmission Theory, Capital Market Development Theory, and the Macroeconomic Instability and Dynamic Adjustment Perspective, which collectively explain how monetary policy shocks are transmitted through interest rate adjustments, capital market development, and broader macroeconomic conditions to influence economic growth.

**Identification Restriction Matrix**

Unlike the reduced form VAR, the SVAR imposes economically motivated identification restrictions on the contemporaneous coefficient matrix $A_0$, enabling the separation of exogenous monetary policy shocks from endogenous macroeconomic responses (Sims, 1980; Kilian & Lütkepohl, 2017). This identification strategy produces economically interpretable impulse responses and variance decompositions. Thus, providing a more robust framework for analysing the dynamic interactions among interest rate transmission, capital market development, and economic growth in Nigeria.The contemporaneous matrix is defined as follows:

$$\boldsymbol{A_0} = \begin{bmatrix} \mathbf{1} & \mathbf{0} & \mathbf{0} & \mathbf{0} & \mathbf{0} & \mathbf{0} & \mathbf{0} \\ \boldsymbol{a_{21}} & \mathbf{1} & \mathbf{0} & \boldsymbol{a_{24}} & \boldsymbol{a_{25}} & \mathbf{0} & \mathbf{0} \\ \boldsymbol{a_{32}} & \mathbf{1} & \mathbf{0} & \mathbf{0} & \mathbf{0} & \mathbf{0} & \mathbf{0} \\ \boldsymbol{a_{41}} & \boldsymbol{a_{42}} & \boldsymbol{a_{43}} & \mathbf{0} & \mathbf{1} & \boldsymbol{a_{45}} & \mathbf{0} \\ \mathbf{0} & \boldsymbol{a_{52}} & \mathbf{0} & \boldsymbol{a_{54}} & \mathbf{1} & \mathbf{0} & \mathbf{0} \\ \mathbf{0} & \mathbf{0} & \boldsymbol{a_{63}} & \boldsymbol{a_{64}} & \mathbf{0} & \mathbf{1} & \mathbf{0} \\ \mathbf{0} & \boldsymbol{a_{73}} & \mathbf{0} & \mathbf{0} & \boldsymbol{a_{75}} & \mathbf{0} & \mathbf{1} \end{bmatrix}$$

The identification restrictions reflected economically consistent assumptions whereby interest rates responded contemporaneously to inflation and exchange rate movements.This is aligned with monetary policy reaction functions as documented by Ocran et al. (2022), Famubode and Ali (2024), and Kofi (2022). The assumption that economic growth adjusted with a lag was supported by the structural VAR evidence of Usman and Bashir (2022), who demonstrated delayed output responses arising from nominal and real rigidities. Capital market development was assumed to adjust gradually to monetary policy conditions, reflecting the time required for financial markets to respond to changes in interest rates and macroeconomic fundamentals (Levine, 1997; Akpokerere et al., 2024). Inflation dynamics captured contemporaneous interactions among output and monetary policy, as highlighted by Constâncio (2015). The inclusion of exchange rate, financial development, and government expenditure as complementary transmission channels followed Aikman et al. (2020) and Amase (2022). Thereby, strengthening structural identification, reducing omitted variable bias, and providing a robust model for analysing monetary transmission and economic growth in Nigeria.

**The optimal lag length selection Criterion**

The optimal lag length was determined using the Akaike Information Criterion (AIC), which selected a lag order of two. The AIC was preferred because of its superior performance in relatively small samples and its ability to balance model fit with parameter parsimony. This will help in reducing the risk of model misspecification while adequately capturing the dynamic interactions among the variables (Lütkepohl, 2005; Kilian & Lütkepohl, 2017). The selected lag 2 was subsequently employed in estimating the Structural VAR model and conducting the impulse response and forecast error variance decomposition analyses.

### 4.4 Impulse Response Analysis

To analyse the dynamic effects of shocks, impulse response functions are derived from the estimated SVAR model:

$$\text{IRF(h)} = \frac{\vartheta Y_{t+h}}{\vartheta \mu_t}$$

Where h denotes the forecast horizon and $\mu_t$ represents structural innovations. The impulse responses traced the temporal adjustment of economic growth, capital market development, and other endogenous variables following a shock to interest rates or other structural innovations.

This analytical tool enabled the study to evaluate both the magnitude and persistence of monetary policy effects under varying macroeconomic conditions. In particular, the impulse response functions facilitated the assessment of the dynamic transmission of monetary policy shocks across the endogenous variables over the forecast horizon. Existing studies highlighted the importance of impulse response analysis in understanding the dynamic propagation of structural shocks within the economy (Huneeus, 2018; Domazetoski et al., 2023). By incorporating control variables, the impulse response analysis captured the broader macroeconomic environment within which monetary policy operated, thereby enhancing the robustness and policy relevance of the findings.

## 5. Empirical Results and Discussion

### 5.1 DESCRIPTIVE STATISTICS

**Table 2: Results of Descriptive Statistics**

| Variable | Obs | Mean | Std. Dev. | Min | Max | Skewness | Kurtosis |
|---|---|---|---|---|---|---|---|
| GDP | 35 | 4.0768 | 3.9215 | -2.0351 | 15.329 | 0.5794 | 3.4408 |
| IR | 35 | 3.1527 | 9.8311 | -31.452 | 18.18 | -1.437 | 5.9443 |
| CMD | 35 | 12.587 | 5.5357 | 2.4975 | 30.509 | 1.3388 | 5.3832 |
| INF | 35 | 18.770 | 16.595 | 5.388 | 72.83 | 1.986 | 5.788 |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| EXR | 35 | 110.146 | 47.486 | 49.776 | 273.00 | 1.8072 | 6.5147 |
| FD | 35 | 10.311 | 3.3562 | 4.9575 | 19.625 | 0.8205 | 3.709 |
| GEXP | 35 | 94.673 | 6.3834 | 76.9491 | 105.58 | -0.618 | 3.3369 |

**Author's computation 2026**

The descriptive statistics presented in **Table 2** revealed moderate economic growth alongside substantial macroeconomic volatility. Economic growth averaged **4.08 percent**, with moderate variability (**3.92**), indicating fluctuating economic performance over the study period.

The relatively large standard deviation of the interest rate compared with its mean (IR SD=9.83 > Mean=3.15) reflects substantial monetary policy volatility during the sample period. This was as a result of the sharp interest rate adjustments and episodes of negative real interest rates observed in the late 1990s as Nigeria underwent macroeconomic and financial reforms. **Capital market development**, with a mean of **12.59** and positive skewness (**1.34**), indicated uneven growth in the size and depth of the Nigerian capital market over time. Inflation (**18.77**) and exchange rate (**110.15**) displayed substantial volatility and strong positive skewness exceeding **1.8**, signalling persistent macroeconomic instability. Financial development remained relatively stable, with a mean of **10.31**, while government expenditure exhibited limited variation throughout the study period. Therefore, the distributional characteristics suggested the presence of dynamic interactions and macroeconomic fluctuations. Thus, the adoption of the Structural Vector Autoregression model is justified to capture the complex relationships among interest rate transmission, capital market development, and economic growth in Nigeria.

## 5.2 Correlation Analysis

**Table 3: Results of Correlation Analysis**

| | GDP | IR | CEQ | INF | EXR | FD | GEXP |
|---|---|---|---|---|---|---|---|
| GDP | 1.0000 | | | | | | |
| IR | 0.2557 | 1.0000 | | | | | |
| CMD | -0.0288 | -0.4781 | 1.0000 | | | | |
| INF | -0.3046 | -0.6553 | 0.5471 | 1.0000 | | | |
| EXR | -0.2216 | 0.1134 | 0.1665 | 0.2900 | 1.0000 | | |
| FD | 0.1209 | 0.5372 | -0.3256 | -0.5206 | -0.1832 | 1.0000 | |
| GEXP | -0.3423 | 0.2982 | -0.3948 | -0.0425 | 0.3307 | 0.2805 | 1.0000 |

**Author's computation 2026**

The correlation results in **Table 3** indicate modest linear relationships among the study variables, suggesting the absence of severe multicollinearity. Economic growth exhibited a weak positive association with interest rate (**r = 0.2557**) and financial development (**r = 0.1209**), but weak negative correlations with **capital market development** (**r = -0.0288**), inflation (**r = -0.3046**), exchange rate (**r = -0.2216**), and

government expenditure (**r = -0.3423**). Capital market development showed a moderate negative relationship with interest rate (**r = -0.4781**) and financial development (**r = -0.3256**), but a moderate positive association with inflation (**r = 0.5471**) and a weak positive relationship with exchange rate (**r = 0.1665**). Overall, the relatively low to moderate correlation coefficients indicate that the variables capture distinct dimensions of monetary transmission and capital market dynamics, justifying their inclusion in the Structural VAR model without concerns of serious multicollinearity.

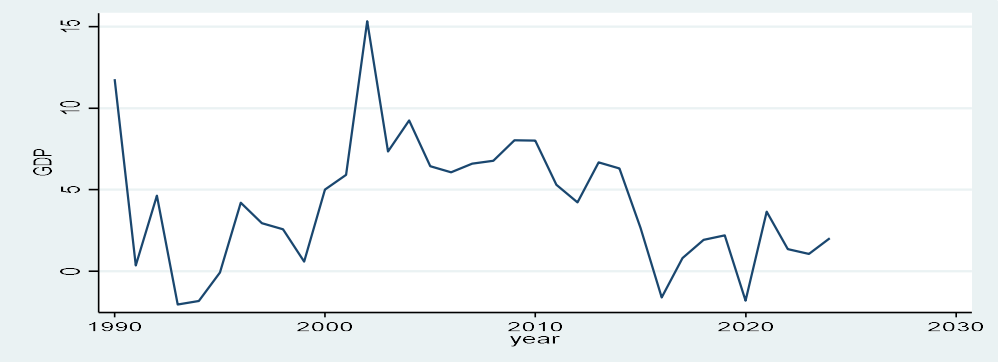



Figure1: Temporal Evolution of Economic Growth and Monetary Policy Indicators in Nigeria

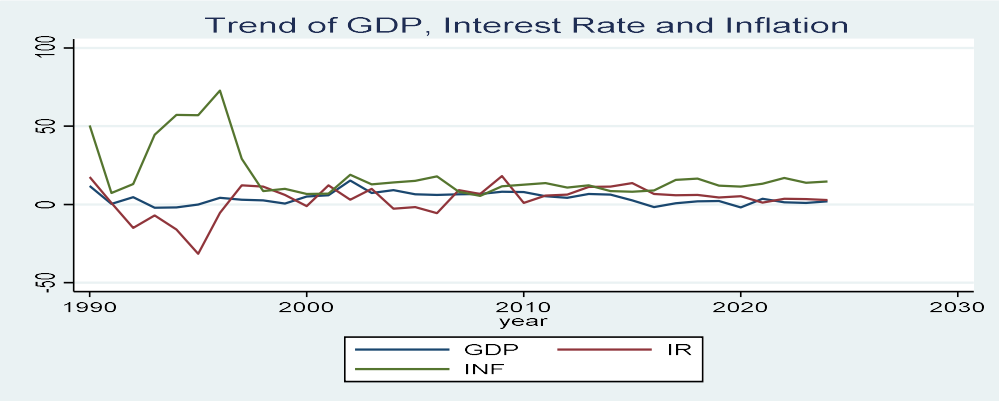



Figure 2: Time Series Dynamics of Macroeconomic Variables under Monetary Policy in Nigeria

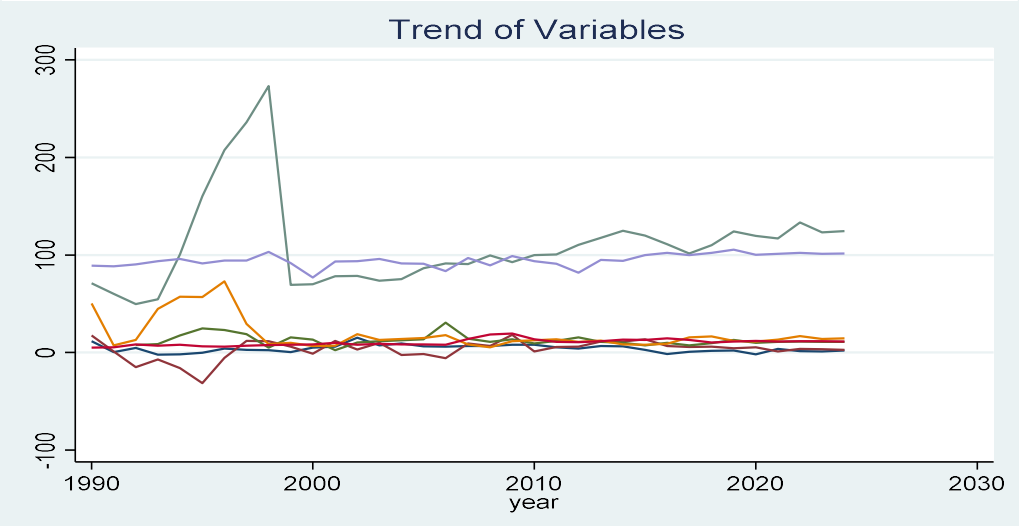



**Figure 3: Stylised Trends of Interest Rate Transmission and Macroeconomic Indicators in Nigeria**

Figures 1 to 3 collectively illustrated the dynamic interaction among interest rate transmission, capital market development, and economic growth in Nigeria over the study period. Economic growth exhibited fluctuating performance, reflecting changing macroeconomic conditions and varying policy effectiveness. Interest rates displayed pronounced volatility, indicating alternating phases of monetary tightening and easing, while capital market development evolved unevenly, suggesting gradual changes in market depth and financial intermediation. Inflation, exchange rate, financial development, and government expenditure also exhibited substantial variability, highlighting persistent macroeconomic instability. Thus, the observed patterns justified the application of the Structural VAR framework to capture the dynamic transmission of monetary policy shocks within the Nigerian economy.

### 5.3 Unit Root Test

**Table 4: Summary of Unit Root Test Results (ADF, DF-GLS, KPSS)**

| Variable | ADF (Trend) | DF-GLS | KPSS (Trend) | Order of Integration |
|---|---|---|---|---|
| GDP | -1.919 (NS) | -2.463 (NS) | 0.349 (NS*) | I(1) |
| IR | -3.464 (S**) | -3.504 (S**) | 0.128 (S) | I(0) |
| CMD | -4.200 (S*) | -3.096 (S**) | 0.0548 (S) | I(0) |
| INF | -3.458 (S**) | -1.090 (NS) | 0.221 (NS*) | I(1) |
| EXR | -2.991 (NS) | -2.351 (NS) | 0.134 (S) | I(1) |
| FD | -3.402 (NS) | -3.092 (S**) | 0.298 (NS*) | I(1) |
| GEXP | -3.269 (NS) | -3.203 (S**) | 0.194 (NS*) | I(1) |

**Note:** S = Stationary, NS = Non-stationary, *, ** denote significance at 1% and 5% levels respectively. KPSS tests null of stationarity.

**Author's computation 2026**

Table 4 unit root results showed mixed orders of integration among the variables, I(0) and I(1). Interest rate and capital market development were stationary at levels.While, economic growth, inflation, exchange rate, financial development, and government expenditure became stationary after first differencing, indicating integration of order one. The absence of variables integrated beyond I(1) supported the suitability of the Structural VAR model. The SVAR adequately captured the dynamic interactions among interest rate transmission, capital market development, and economic growth without violating underlying time series assumptions.

### 5.4 Zivot-Andrews Structural Break Test

**Table 5 Zivot-Andrews Structural Break Test Results**

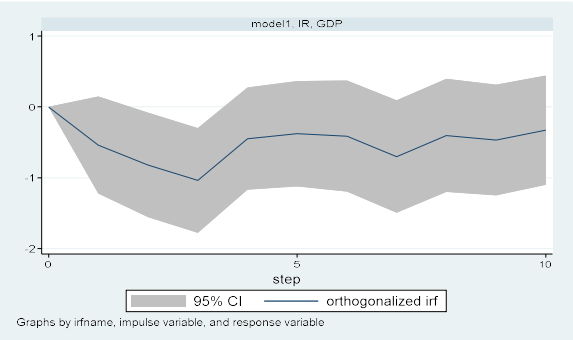
| Variable | Test Statistic | Break Year | 1% CV | 5% CV | 10% CV | Decision |
|---|---|---|---|---|---|---|
| GDP | -6.378*** | 2000 | -5.34 | -4.8 | -4.58 | Stationary with break |
| IR | -6.181*** | 1997 | -5.34 | -4.8 | -4.58 | Stationary with break |
| INF | -7.973*** | 1997 | -5.34 | -4.8 | -4.58 | Stationary with break |

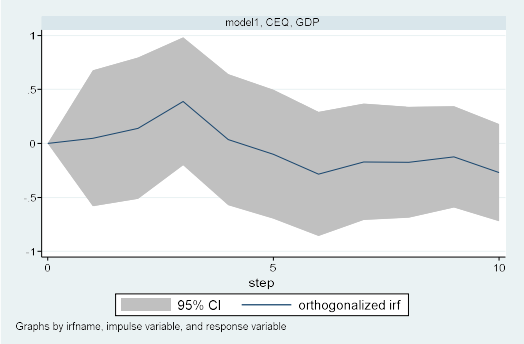
**Note:** *** denotes rejection of the null hypothesis of unit root with structural break at 1% significance level.

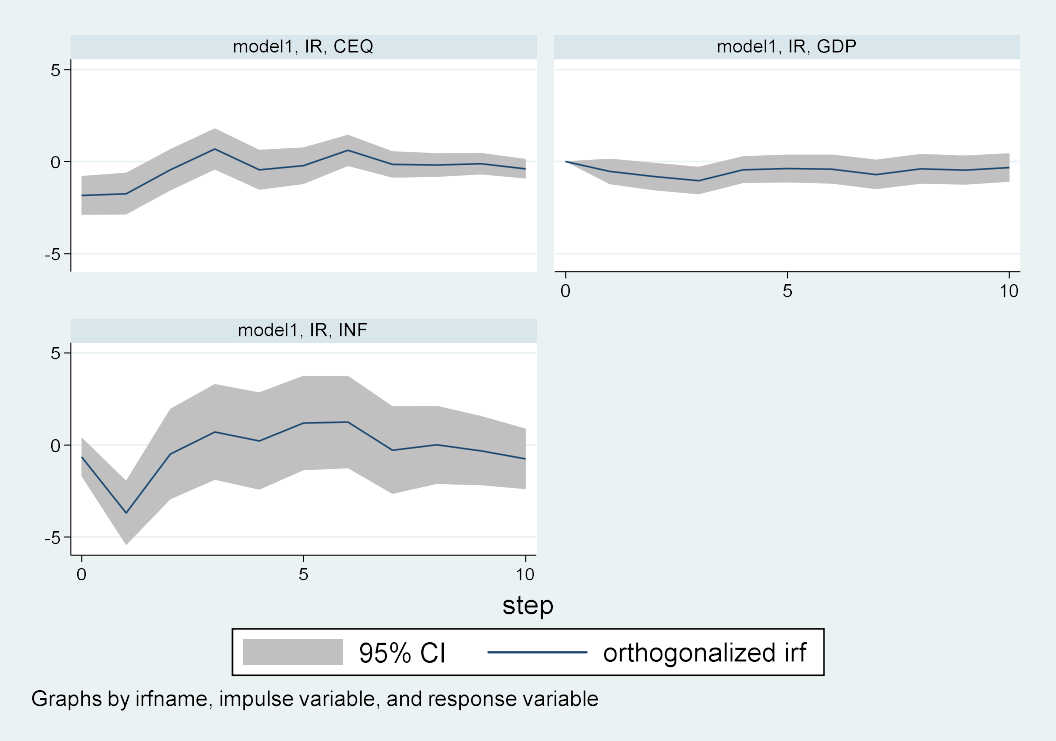
**Author's computation 2026**

The results presented in **Table 5** provided strong evidence of endogenous structural breaks in key macroeconomic variables. The test statistics for economic growth (**-6.378**), interest rate (**-6.181**), and inflation (**-7.973**) exceeded the 1 percent critical values, leading to rejection of the unit root null hypothesis in the presence of structural breaks. The identified break dates coincided with major macroeconomic and monetary policy reforms in Nigeria. These findings suggested that conventional unit root tests could produce biased inferences when structural changes were ignored, thereby justifying the adoption of dynamic econometric techniques. More importantly, the existence of significant structural breaks reinforced the suitability of the Structural VAR framework for analysing the evolving interactions among interest rate transmission, **capital market development**, and economic growth under changing macroeconomic conditions.

## 5.5 Impulse Response Analysis




The impulse response results in the above figures provided detailed insights into the dynamic transmission of monetary policy shocks across key macroeconomic variables. A shock to the interest rate (IR) produced an immediate negative response in capital market development (CMD), indicating that monetary tightening initially reduced market activity and weakened capital market performance through higher financing costs and reduced investment. However, this effect gradually diminished, suggesting progressive adjustment of the capital market to changing monetary conditions over time.

In the IR-GDP response, economic growth exhibited a consistently negative and persistent pattern, confirming the contractionary effect of monetary tightening. The response was strongest during the early periods before gradually weakening, indicating partial adjustment but no complete recovery within the forecast horizon. This finding aligned with the

estimated lag structure, where the impact of interest rate shocks on growth became more pronounced at lag 2, supporting the selection of the optimal lag length. The **IR-INF** response showed that inflation declined sharply in the short run, reflecting the immediate effectiveness of monetary tightening in moderating price pressures. However, the subsequent rebound suggested incomplete transmission and persistent structural rigidities that weakened sustained policy effectiveness. The **CMD-GDP** response revealed that a positive shock to capital market development exerted a weak influence on economic growth initially before becoming positive over subsequent periods. This result indicates that improvements in capital market development contributed to economic growth gradually through improved capital mobilisation and investment financing.

### 5.6 Variance Decomposition (FEVD)

| Horizon | IR→ GDP (Dir.) | CMD→ GDP (Dir.) | INF→ GDP (Dir.) | IR Cont.(%) | CMD Cont.(%) | INF Cont (%) | EXR Cont (%) | FD Cont (%) | GEXPCont (%) | Horizon |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Negative | Weak/Neg | Negative | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| 2 | Negative | Weak | Negative | 4.94 | 0.04 | 6.49 | 4.31 | 0.32 | 0.94 | 4.94 |
| 3 | Negative | Weak | Mixed | 13.31 | 0.3 | 5.58 | 5.24 | 0.93 | 3.75 | 13.31 |
| 4 | Negative | Positive | Mixed | 23.63 | 2.01 | 5.45 | 4.87 | 0.8 | 3.16 | 23.63 |
| 5 | Negative | Positive | Mixed | 24.05 | 1.87 | 5.31 | 4.69 | 1.81 | 3.68 | 24.05 |
| 6 | Negative | Positive | Mixed | 23.23 | 1.8 | 5.6 | 4.94 | 2.25 | 3.61 | 23.23 |
| 7 | Negative | Positive | Mixed | 23.21 | 2.4 | 5.26 | 4.73 | 2.67 | 4.62 | 23.21 |
| 8 | Negative | Positive | Mixed | 26.12 | 2.52 | 5.16 | 5.07 | 2.52 | 4.57 | 26.12 |
| 9 | Negative | Positive | Mixed | 26.82 | 2.71 | 5.19 | 5.03 | 2.53 | 4.99 | 26.82 |
| 10 | Negative | Positive | Mixed | 27.99 | 2.78 | 5.07 | 5.13 | 2.48 | 4.99 | 27.99 |

**Note: Values are derived from FEVD results; IRF directions summarise graphical responses.**

**Author's computation 2026.**

Table 6 combined the impulse response and forecast error variance decomposition results, showing that economic growth in Nigeria was initially driven by its own innovations but became increasingly influenced by monetary policy dynamics over time. The impulse responses indicated a persistent negative effect of interest rate shocks on economic growth, while the FEVD results showed that interest rate innovations explained approximately 28 percent of long run growth variability. Capital market development exerted a weak but gradually increasing positive influence, contributing less than 3 percent to GDP variance, indicating limited direct transmission to economic growth. Inflation and exchange rate contributions remained moderate and relatively stable, reflecting persistent macroeconomic rigidities. Generally, the findings underscored the dominant role of interest rate transmission, while highlighting the gradual contribution of capital market development to economic growth through dynamic monetary transmission mechanisms.

### 5.7 Robustness Checks

To ensure the reliability of the empirical findings, several robustness checks were conducted. First, the stability of the SVAR model was confirmed through eigenvalue diagnostics, which demonstrated that all roots lie within the unit circle, thereby satisfying the stability condition. Second, the use of market capitalisation of listed domestic companies as a proxy for capital market development remained consistent with established macroeconomic and

financial development literature, ensuring the validity of the empirical specification. Third, the inclusion of key control variables, namely exchange rate, financial development, and government expenditure, strengthened model specification and mitigated potential omitted variable bias, thereby enhancing the robustness and reliability of the estimated results.

5.7 VAR Stability Test (Eigenvalue Condition)

**Table 7: VAR Stability Test**

| Eigenvalue | Modulus | Stability Condition |
|---|---|---|
| 0.9278 | 0.9278 | < 1 |
| -0.8952 | 0.8952 | < 1 |
| 0.6893 ± 0.5117i | 0.8585 | < 1 |
| -0.4202 ± 0.7169i | 0.831 | < 1 |
| 0.2494 ± 0.6446i | 0.6911 | < 1 |
| 0.6179 ± 0.2168i | 0.6549 | < 1 |
| -0.0524 ± 0.5755i | 0.5779 | < 1 |
| -0.2199 ± 0.1317i | 0.2563 | < 1 |

**Note:** Stability condition requires all eigenvalues to lie strictly within the unit circle (modulus < 1).

**Author's computation 2026**

The stability diagnostics presented in Table **7** confirmed that the estimated VAR model satisfied the eigenvalue stability condition, as all moduli were strictly less than unity. The largest modulus **(**0.9278**)** remained below the unit threshold, indicating that shocks to the system dissipated over time rather than generating explosive dynamics. The presence of complex conjugate eigenvalues further suggested cyclical adjustment patterns in the interactions among interest rate, capital market **development**, and economic growth. This result validated the dynamic specification of the model and supported the reliability of the subsequent impulse response and forecast error variance decomposition analyses. From a theoretical perspective, the confirmed stability implied that the transmission mechanisms captured by the model were mean reverting and consistent with macroeconomic equilibrium behaviour in Nigeria.

Therefore, the robustness diagnostics reinforced the validity of the estimated relationships and supported the consistency of the study's conclusions regarding the transmission of interest rate shocks and the role of **capital market development** in shaping economic growth dynamics in Nigeria. The impulse responses further revealed asymmetric and time varying transmission dynamics, characterised by stronger short run effects and gradual long run adjustments across the variables. These findings underscored the importance of dynamic modelling in capturing delayed responses within Nigeria's monetary

transmission process and remained robust under the selected lag structure.

## 6. Discussion of Findings

The empirical findings derived from the structural VAR with lag (2) revealed a complex and asymmetric transmission mechanism linking interest rate dynamics, capital market development, and economic growth in Nigeria. The persistent negative response of economic growth to interest rate shocks, as revealed by the impulse response and variance decomposition results, supported **the** New Keynesian Monetary Transmission Theory, which argued that tighter monetary conditions suppress aggregate demand and output through the cost of capital and expectations channels. This outcome aligned with Acar (2000), Umeaduma (2024), and Qureshi and Javed (2024), who pointed out the contractionary effects of rising interest rates in developing economies. However, the persistence of the negative response suggested deeper structural rigidities and policy inefficiencies within the Nigerian economy.

Further insight was provided by the weak and delayed influence of capital market development on economic growth. According to Capital Market Development Theory, deeper and more efficient capital markets should enhance investment mobilisation and resource allocation, thereby promoting economic growth. However, the findings indicated only marginal and delayed macroeconomic effects. This partially contradicted Boneva et al. (2022), although it remained consistent with evidence from frontier economies characterised by shallow capital markets and structural financial constraints. Inflation dynamics also complicated the transmission process. While inflation initially declined following interest rate shocks, consistent with the New Keynesian Monetary Transmission Theory, the subsequent rebound reflected delayed pass through and persistent structural bottlenecks. Therefore, the findings reinforced the relevance of the New Keynesian Monetary Transmission Theory **and** Capital Market Development Theory by demonstrating that the effectiveness of monetary policy depended not only on interest rate adjustments but also on the capacity of capital markets to support investment and economic growth in Nigeria.

## 7. Conclusion

This study examined the dynamic relationship among interest rate transmission, capital market development, and economic growth in Nigeria using a Structural VAR framework. The findings revealed that interest rate shocks exerted persistent contractionary effects on economic growth, while capital market development demonstrated a weak but delayed positive influence on macroeconomic performance. Inflation responses further indicated structural rigidities and incomplete monetary policy pass through within the Nigerian economy. These results reinforced the relevance of the New Keynesian Monetary Transmission Theory **and** Capital Market Development Theory by highlighting the importance of well functioning capital markets in strengthening policy transmission. The study provided important implications for monetary authorities, financial regulators, and policymakers seeking to enhance macroeconomic stability and deepen capital market development in developing economies. Nonetheless, the reliance on annual data and aggregate indicators may constrain broader generalisation. Future studies should employ higher frequency data and alternative capital market development indicators to deepen understanding of monetary transmission dynamics in emerging economies.

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