International Journal of Applied Research in Business and Management (ISSN: 2700-8983)
an Open Access journal by Wohllebe & Ross Publishing, Germany.
Volume: 06 Issue: 02 Year: 2025
https://doi.org/10.51137/wrp.ijarbm.2025.ciit.45815

Inflation and Economic Growth Dynamics in Nigeria: Evidence from the SVEC Model and Frequency-Domain Causality Approach

Authors:

Christopher Ikechuckwu Ifeacho (christopheri@dut.ac.za)
Durban University of Technology, Durban, South Africa

Timilehin Olasehinde (timmexdareal@gmail.com)
Federal University Oye-Ekiti, Oye-Ekiti, Nigeria

Nqobile Mpala (mpala.nqobile@mut.ac.za)
Mangosuthu University of Technology, Durban, South Africa

Abstract:

The inflation-growth relationship has been a central issue in macroeconomic policy debates, particularly in developing economies like Nigeria. In this regard, this study examines the dynamic relationship between inflation and economic growth in Nigeria from 1981 to 2021. Specifically, it investigates the long-run impact of inflation on growth, the short-run adjustment process, and the direction of causality between them. The findings reveal a negative long-run relationship between inflation and economic growth, while interest rates and physical capital accumulation are positive long-run drivers of growth. Except for interest rates, all variables significantly adjust towards long-run equilibrium aftershocks. The impulse response analysis shows that aggregate demand shocks to inflation initially raise GDP, while supply shocks have a lasting effect on inflation. Additionally, investment shocks have a persistent positive effect on growth, whereas interest rate shocks exert a negative but transitory influence on both output and prices. The frequency causality tests indicate that inflation causes growth in the short and medium run, but not vice versa. Based on these findings, it is recommended that policymakers ensure stable inflation, support capital accumulation, and align interest rate policies with growth objectives.

Keywords:

Inflation, Growth, Structural VAR, Causality, Shocks.

Submitted: 2025-06-07. Revised: 2025-06-17. Accepted: 2025-06-20.

International Journal of Applied Research in Business and Management (ISSN: 2700-8983)
an Open Access journal by Wohllebe & Ross Publishing, Germany.
Volume: 06 Issue: 02 Year: 2025
https://doi.org/10.51137/wrp.ijarbm.2025.ciit.45815

Introduction

The link between inflation and economic growth remains one of the most debated issues in macroeconomics, generating significant theoretical and policy interest. Various economic schools offer contrasting views: Structuralists, Keynesians, and advocates of endogenous growth theories (e.g., Mundell, 1963; Tobin, 1965; Kirkpatrick & Nixson, 1987; Agenor & Montiel, 1996; Mallik & Chowdhury, 2001) argue that moderate inflation can foster economic growth by encouraging investment and boosting output. In contrast, the Monetarist perspective, advanced by scholars like Gultekin (1983), Fisher (1993), and Barro (1995), contends that inflation—especially at high rates—hinders growth by distorting resource allocation, discouraging savings, and undermining investment efficiency. Adding a different dimension, Sidrauski (1967) adopts a neutral stance, proposing that inflation has no long-term impact on economic growth. These divergent theoretical positions have contributed to ongoing debates and mixed empirical evidence in the literature. In the Nigerian context, understanding the nature and direction of the relationship between inflation and economic growth is vital for formulating effective macroeconomic stabilization policies. A central issue is whether inflation drives economic growth or if economic expansion, particularly during boom periods, generates inflationary pressures. The empirical evidence on this matter remains inconclusive. For example, while Okoroafor *et al*. (2018) reported no causal relationship between inflation and economic growth in Nigeria, other studies such as Bakare *et al*. (2015) and Saungweme and Odhiambo (2021) found a statistically significant causal link. These conflicting findings may stem from variations in study periods, analytical approaches, and econometric methodologies employed across different studies.

Furthermore, a notable gap in the existing literature is the limited application of dynamic modelling approaches that effectively capture the evolving and interdependent nature of the inflation-growth relationship. Many previous studies such as Mavikela *et al*. (2019), Abderrahim *et al*. (2021) and Saungweme and Odhiambo (2021) have relied on static or single-equation dynamic models—such as Ordinary Least Squares (OLS), multiple regression, or Autoregressive Distributed Lag (ARDL) models—which often fall short in addressing simultaneity and endogeneity, issues that are pervasive in macroeconomic time series analysis (Hill *et al*., 2021). Contemporary macroeconomic frameworks, particularly New Keynesian models, emphasize the endogenous interactions between inflation and output, underscoring the limitations of traditional estimation techniques (Saqib, 2024). As a result, reliance on such conventional models may yield biased or inconsistent estimates.

To address these limitations, this study adopts the Structural Vector Error Correction (SVEC) model, which offers a more robust and internally consistent framework for analysing both the short- and long-run dynamics between inflation and economic growth. The SVEC model effectively incorporates long-run equilibrium conditions while accounting for endogeneity. It also enables the application of the

International Journal of Applied Research in Business and Management (ISSN: 2700-8983)
an Open Access journal by Wohllebe & Ross Publishing, Germany.
Volume: 06 Issue: 02 Year: 2025
https://doi.org/10.51137/wrp.ijarbm.2025.ciit.45815

impulse response function, which is essential for tracing the transmission of shocks and quantifying their effects over time (Oyebanji & Kleynhans, 2022). Additionally, this study introduces an innovative dimension by employing nonlinear frequency-domain causality tests. These tests provide a nuanced perspective on the direction and intensity of causality across different time horizons—short-term, medium-term, and long-term (Candelon & Hasse, 2023). This frequency-specific analysis is particularly valuable for policymakers aiming to understand how inflation-growth interactions may vary across business cycles or structural economic changes. By integrating these advanced methodologies, the study seeks to generate new empirical evidence and support the design of macroeconomic policies that effectively balance inflation control with sustainable economic growth in Nigeria.

In the foregoing analysis, this study aims to meticulously examine whether economic expansion drives inflation or vice versa, within the context of the Nigerian economy.

Literature Review

Several empirical studies have been carried out on the relationship between inflation and economic growth in literature. One of these is the study of Anidiobu *et al*. (2018) who utilized annual data from 1986 to 2015 to examine the effect of inflation on economic growth in Nigeria. The result from the multiple linear regression model they estimated showed that the inflation rate had a positive and non-significant impact on Nigerian GDP during the scope covered. Also, Okoroafor *et al*. (2018) forecasted and examined the relationship between inflation and the economy in Nigeria for the period 1961 to 2016. Their study employed the Granger causality test, Threshold Autoregressive Distributed Lag (TARDL), Autoregressive Integrated Moving Average (ARIMA) and Vector AutoRegressive (VAR) models. The Granger causality test result showed no evidence of causality between inflation and economic growth. Uddin (2019) studied the nexus between dynamic inflation and economic growth in Bangladesh using yearly data from 1987 to 2017. The study employed a cointegration technique and a vector error correction model. However, the study showed that inflation has no significant impact on economic growth both in the short and long run. Idris and Suleiman (2019) look at the impact of inflation on Nigerian economic growth from 1980 to 2017. The Vector Error Correcting (VEC) method is adopted as the econometric technique in their study. They found in their study cointegration evidence among the variables used and that inflation and interest rate impact Nigerian economic growth negatively in the long run.

Mavikela *et al*. (2019) examined the inflation-growth relationship in Sub-Saharan Africa (SSA) inflation-targeting countries. They sampled South Africa and Ghana in their study and used yearly data covering the period 1970 to 2016 to estimate a multivariate quantile regression model (QRM). Their result showed that inflation impacts growth positively in Ghana but no evidence was found in the case of South Africa. However, the sensitivity analysis showed that inflation impacts both countries' growth negatively.

Kryeziu and Durguti (2019) studied the impact of inflation on economic growth in the Eurozone. The study used annualized panel data that covered 1997 to 2017 on GDP growth rate, inflation, debt to GDP, bond yield, and unemployment rate and employed the panel least square technique to estimate a panel, multiple linear regression model. They found in their study that the inflation rate significantly increases the Eurozone economic growth rate. Gavin (2019) studied the inflation and economic activity in Suriname using yearly data from 1975 to 2015. He employed a Vector AutoRegressive (VAR) framework. With the consumer price index (CPI) in the VAR framework, he also included the exchange rate, money supply, and oil price as controls for other sources of domestic inflation (change in consumer price index). The result of the study showed that aggregate demand shock to price, oil price shock, and exchange rate shock impact gross domestic product (GDP) negatively while monetary policy shock to money supply impacts GDP positively.

Adaramola and Dada (2020) examined the impact of inflation on economic growth in Nigeria using annual data from 1980 to 2018. The study employed a seven-variable (GDP, inflation rate, exchange rate, trade openness, money supply, government spending) AutoRegressive Distributed Lag (ARDL) model. They found in their study that inflation and exchange rate had a significant negative impact on economic growth in the long run, whereas money supply and interest rate had a positive and significant impact on economic growth in the long run. The result is consistent for inflation and exchange rate in the short run. Also, they found no evidence of a causal relationship between inflation and economic growth.

Abderrahim *et al*., (2021) studied the impact of inflation on economic growth in Morocco using annual data on GDP and consumer price index (CPI) from 1989 to 2019. Using the Distributed Lag Model (DLM) as a tool of data analysis, they found in their study that inflation has no impact on Moroccan economic growth both in the short-run and long run. Mandeya and Ho (2021) examined the impact of inflation, and inflation uncertainty on South Africa's economic growth using quarterly data from 1961q1-2019q4. They employed the Autoregressive Distributed Lag (ARDL) model as a technique of data analysis. They showed in their study that inflation negatively impacts growth in South Africa in both the short and long run, while inflation uncertainty (proxy with inflation volatility) negatively impacts growth in South Africa only in the short run. Saungweme and Odhiambo (2021) examined the relationship between economic growth and inflation in Kenya from 1970 to 2019. The study used the Autoregressive Distributed Lag (ARDL) bounds testing approach and Granger-causality taking the structural breaks in the data into account. The study revealed that inflation negatively impacts Kenyan economic growth in the long run. However, the causality test result revealed that there exists a unidirectional causality running from economic growth to inflation in Kenya, but only in the short run. Onwubuariri *et al*. (2021) investigated the impact of inflation on Nigeria's economic growth using annual GDP, Inflation rate, interest rate, exchange rate, and government expenditure from 1980 to 2019. The study utilized the Error Correction

International Journal of Applied Research in Business and Management (ISSN: 2700-8983)
an Open Access journal by Wohllebe & Ross Publishing, Germany.
Volume: 06 Issue: 02 Year: 2025
https://doi.org/10.51137/wrp.ijarbm.2025.ciit.45815

Model (ECM) type of AutoRegressive Distributed Lag (ARDL) as a tool for data analysis. Both in the short and long runs, the study revealed that inflation and exchange rates harm Nigerian economic growth while interest rates are impacted positively.

In the review literature, it can be noted that some studies (Adaramola & Dada, 2020; Onwubuariri et al., 2021) incorporated the level of GDP and inflation in a model and this undoubtedly would lead to bias in the result; since inflation entered the model in rate, then GDP should have also been in rate. However, this study uses the GDP and the consumer price index in their log form due to the advantages attached to them. First, cointegration can be performed on them and also changes in their log form would correspond to their rat; the flavour of using the error-correction (VEC) model suffices here. Moreover, most of the studies (Adaramola & Dada, 2020; Abderrahim *et al*., 2021; Mandeya and Ho, 2021; Saungweme and Odhiambo, 2021; Onwubuariri *et al*., 2021) employed a single equation dynamic model which may not properly account for the endogeneity problem. In addition, some studies (Okoroafor *et al* 2018; Saungweme & Odhiambo, 2021) carried out Granger causality but could not ascertain the degree of the causality, whether it is in the short run, medium run, or long run. With these, this study employed a VEC model to analyse the level of relationship between the consumer price index, from which the inflation is computed, and GDP, from which the growth is computed. This allowed us to cross-examine both the short and the long-run dynamics between the two variables and how they respond to each other's shock. Also, the frequency domain causality test is adopted to ascertain the degree of causality between inflation and economic growth in the short run, medium run, and long run.

Methods and Data

The study employed a four-variable SVEC model to examine the dynamic interaction between inflation and economic growth in Nigeria. However, the underlying VEC model is presented as:

$$\begin{bmatrix}\Delta \ln(Y_t)\\ \Delta \ln(P_t)\\ \Delta \ln(K_t)\\ \Delta \ln(r_t)\end{bmatrix} = \begin{bmatrix}a_{11}\\ a_{21}\\ a_{31}\\ a_{41}\end{bmatrix}[1 \quad \beta_{11} \quad \beta_{12} \quad \beta_{13}] \begin{bmatrix}\ln(Y_{t-1})\\ \ln(P_{t-1})\\ \ln(K_{t-1})\\ \ln(r_{t-1})\end{bmatrix} + \sum_{i=1}^{p} \Gamma_i \Delta Z_{t-i} + v_t \qquad (1)$$

Where in the system, Y is the real GDP, P is the consumer price index, K is the physical capital, and r is the interest rate. The alpha matrix is the vector of the adjustment terms while the beta matrix is the long-run cointegrating vector. In the study, a single cointegrating vector is assumed normalizing for real GDP to align with the classical production equation. The last part of the equation (v_t) is the vector of error terms in the system. Moreover, it can be noticed that the left-hand side of equation (1) corresponds to the vector of the variables in growth form since a change in the log of a variable is equivalent to the growth of the variable. Therefore, $\Delta \log(Y_t)$ is the output growth, $\Delta \log(P_t)$ is the inflation rate, $\Delta \log(K_t)$

International Journal of Applied Research in Business and Management (ISSN: 2700-8983)
an Open Access journal by Wohllebe & Ross Publishing, Germany.
Volume: 06 Issue: 02 Year: 2025
https://doi.org/10.51137/wrp.ijarbm.2025.ciit.45815

is the investment return, and $\Delta \log(r_t)$ is the marginal cost. Regarding the theoretical sign for the cointegration vector, the monetarist view suggested that the impact of inflation on economic growth should be zero whereas the neoclassical inflation-growth theory suggested that inflation is expected to impact both output and capital positively. Meanwhile, traditional macroeconomics suggests that the output-price relationship is inverse. Therefore, β_{11} can either be positive, negative or zero. Undoubtedly, capital accumulation is expected to drive economic growth and thus β_{12} is expected to be positive. Lastly, the impact of interest rate on output can be viewed from two different angles; the money market school of thought suggest a positive output and interest rate relationship while the goods market supports a negative output and interest rate relationship. Therefore, β_{13} can either be positive or negative.

The short-run (*B*) and long-run (ΞB) structural identification matrices for the VEC model shocks are presented as:

$$\mathrm{B} = \begin{bmatrix} s_{11} & 0 & 0 & s_{14} \\ s_{21} & s_{22} & s_{23} & s_{24} \\ s_{31} & s_{32} & s_{33} & s_{34} \\ s_{41} & s_{42} & 0 & s_{44} \end{bmatrix}, \qquad \Xi\mathrm{B} = \begin{bmatrix} l_{11} & l_{12} & l_{13} & 0 \\ l_{21} & l_{22} & l_{23} & 0 \\ l_{31} & l_{32} & l_{33} & 0 \\ l_{41} & l_{42} & l_{43} & 0 \end{bmatrix} \tag{2}$$

In a system with K endogenous variables, there are r cointegrating vectors (where r < K), indicating that there are k* (k* = K – r) permanent shocks and r transitory (or temporary) shocks. The columns corresponding to the transitory shocks are set to zero, representing k* independent restrictions. For the transitory shocks, these zero restrictions yield k × r independent conditions, and an additional k*(k* − 1)/2 restrictions are necessary to fully identify the permanent shocks. According to King *et al*. (1991), identifying the transitory shocks further requires r(r − 1)/2 contemporaneous restrictions. Altogether, the total number of restrictions required sums up to K(K − 1)/2, which matches the total needed for a fully identified SVAR model. For example, in a model with four variables (K = 4), the required number of linearly independent restrictions to identify the structural shocks would be 4(4 − 1)/2 = 6. In this regard, the last two columns in the long-run matrix imply that the monetary policy shock has transitory effects on the system. The additional 3 restrictions are placed on the short-run matrix. The two zeros in the first row imply that aggregate demand shock and investment shock have no immediate effect on output since the last stock of capital is used in current production. The zero in the last row implies that investment shock has zero effect on the interest rate but with delay.

Regarding the inflation-growth causal relationship, the Breitung-Candelon (2006) frequency domain causality test approach is employed in this study. Unlike the conventional time-domain causality tests, this frequency domain test can test for the short-run causality, the medium-run causality, and the long-run causality simultaneously.

Due to availability issues, the data for this study covered the period of 1981 to 2021 and were sourced from the Central Bank of Nigeria statistical bulletin and the World Bank Development Indicator database.

International Journal of Applied Research in Business and Management (ISSN: 2700-8983)
an Open Access journal by Wohllebe & Ross Publishing, Germany.
Volume: 06 Issue: 02 Year: 2025
https://doi.org/10.51137/wrp.ijarbm.2025.ciit.45815

Results

Table 1 presents the descriptive statistics for the variables employed.

Variable	Mean	Std. Dev.	c.v.	Max	Min
Y ($ billion)	375501	50434.9	1.343	176075.5	139.3
P	74.472	92.146	1.237	354.304	0.489
K ($ billion)	7957.7	12320.1	1.548	58293.95	87.15
R (%)	17.446	4.811	0.276	31.65	8.917

Table 1: Descriptive statistics

Firstly, the real GDP averaged $375.5 billion, with a high standard deviation of $50.4 billion, suggesting considerable economic growth volatility. The coefficient of variation (c.v.) of 1.343 further confirms the relative instability of GDP during the period. Furthermore, the consumer prices index, with a mean of 74.47, also displayed high variability (c.v. = 1.237), indicating pronounced inflationary trends and price level fluctuations, as reflected by the wide range from 0.49 to 354.30. It is also observed that physical capital stock averaged $7.96 billion but was highly dispersed (std. dev. = $12.32 billion, c.v. = 1.548), reflecting uneven patterns of capital accumulation, possibly due to inconsistent investment and policy regimes. In contrast, the interest rate (r) was relatively more stable, with a mean of 17.45% and a much lower coefficient of variation (0.276), fluctuating between 8.92% and 31.65%. Overall, the data suggest a highly volatile macroeconomic environment for Nigeria, especially in terms of output, prices, and capital, with interest rates showing comparatively more stability.

		ADF		Phillips-Perron		Remark
Variable	term	level	diff.	level	diff.	
log(Y)	c	-1.395	-3.460**	-1.046	-3.385**	*I*(1)
	c & t	0.179	-3.674**	-0.615	-3.597**	*I*(1)
log(P)	c	-1.627	-3.690***	-1.684	-2.920*	*I*(1)
	c & t	-0.985	-4.002**	-0.885	-2.974	*I*(1)
log(r)	c	-2.154	-5.765***	-2.229	-5.800***	*I*(1)
	c & t	-1.684	-6.286***	-1.677	-6.287***	*I*(1)
log(K)	c	0.668	-3.928***	0.297	-3.893***	*I*(1)
	c & t	-2.229	-3.929**	-2.205	-3.928**	*I*(1)

Table 2: Unit-root test results

Note: *** p < 0.01; ** p < 0.05; * p < 0.1

The result of the unit root test is presented in Table 2. The Augmented Dickey-Fuller (ADF) and the Phillips-Perron unit root test results revealed that the variables are first-order integrated variables i.e. they are not stationary but become stationary after the first difference. The statistical implication of this result is that the integrated variables are likely to contain long-run information and differencing them might lead to loss of this information. On the other hand, using their level form in estimation may yield a

International Journal of Applied Research in Business and Management (ISSN: 2700-8983)
an Open Access journal by Wohllebe & Ross Publishing, Germany.
Volume: 06 Issue: 02 Year: 2025
https://doi.org/10.51137/wrp.ijarbm.2025.ciit.45815

spurious result. Hence, it is required that a cointegration relationship among the variables is tested for and the Johansen approach to testing for cointegration suffices in this situation.

Lag	LR	AIC	SC	HQ
0	NA	3.664	3.835	3.725
1	365.347*	-6.261	-5.408*	-5.955*
2	25.746	-6.298*	-4.763	-5.747

Table 3: Lag selection results

Note: * indicates lag order selected by the criterion

The Johansen cointegration technique is sensitive to the nature of the data-generating process and the choice of lag length (Elias *et al*., 2023); hence a series of nested likelihood ratio tests on level VAR is usually adopted to determine the optimal lag length (p) before performing the cointegration test and the lag selection results are presented in Table 3. It can be deduced from the result that the selection criteria do not agree on a definite choice of lag length; however, lag one is used in the testing in this study as it is expected to fit the data generation process well for yearly data than when lag two is used.

	Data trend				
Test type	None	None	Linear	Linear	Quadratic
Const.	no	yes	Yes	yes	yes
Trend	no	no	No	yes	yes
Trace	1	1	1	3	2
Max-Eig.	0	1	0	0	0

Table 4: Cointegration tests summary

The results of the cointegration test based on several assumptions are summarized in Table 4. The rule of thumb is that a test's result with a full rank implies that a VAR model is appropriate while a VEC model is in a reduced rank case. A zero-rank test's result implies that a VAR model with a differenced variable should be estimated. However, the results of the Trace and the Maximum-Eigen statistics do not always agree but the literature (Lütkepohl, 2005) suggested that the Trace statistic is more robust than the Maximum-Eigen statistics. Nevertheless, the results under different assumptions in Table 4 show that there are at least three cointegrating vectors and at most one in the system of variables.

Variable	Normalized beta	Equation	ECT_{t-1}
$\ln(Y)$	1	$\Delta\ln(Y_t)$	-0.077*** (0.019)
$\ln(P)$	1.570*** (0.557)	$\Delta\ln(P_t)$	-0.084*** (0.0220)
$\ln(K)$	-1.720*** (0.636)	$\Delta\ln(K_t)$	-0.066** (0.028)

International Journal of Applied Research in Business and Management (ISSN: 2700-8983)
an Open Access journal by Wohllebe & Ross Publishing, Germany.
Volume: 06 Issue: 02 Year: 2025
https://doi.org/10.51137/wrp.ijarbm.2025.ciit.45815

$\ln(r)$	-3.575*** (0.642)	$\Delta \ln(r_t)$	0.055** (0.027)

Table 5: Long-run and adjustment coefficient estimates

Note: () contains the standard error, *** p < 0.01; ** p < 0.05; * p < 0.1

Table 5 presents the long-run coefficients and the error-correction (adjustment) coefficients obtained from the Vector Error Correction (VEC) model estimation. The results provide insightful evidence on the long-run equilibrium relationships among output, price level, interest rate, and capital in the Nigerian economy over the study period.

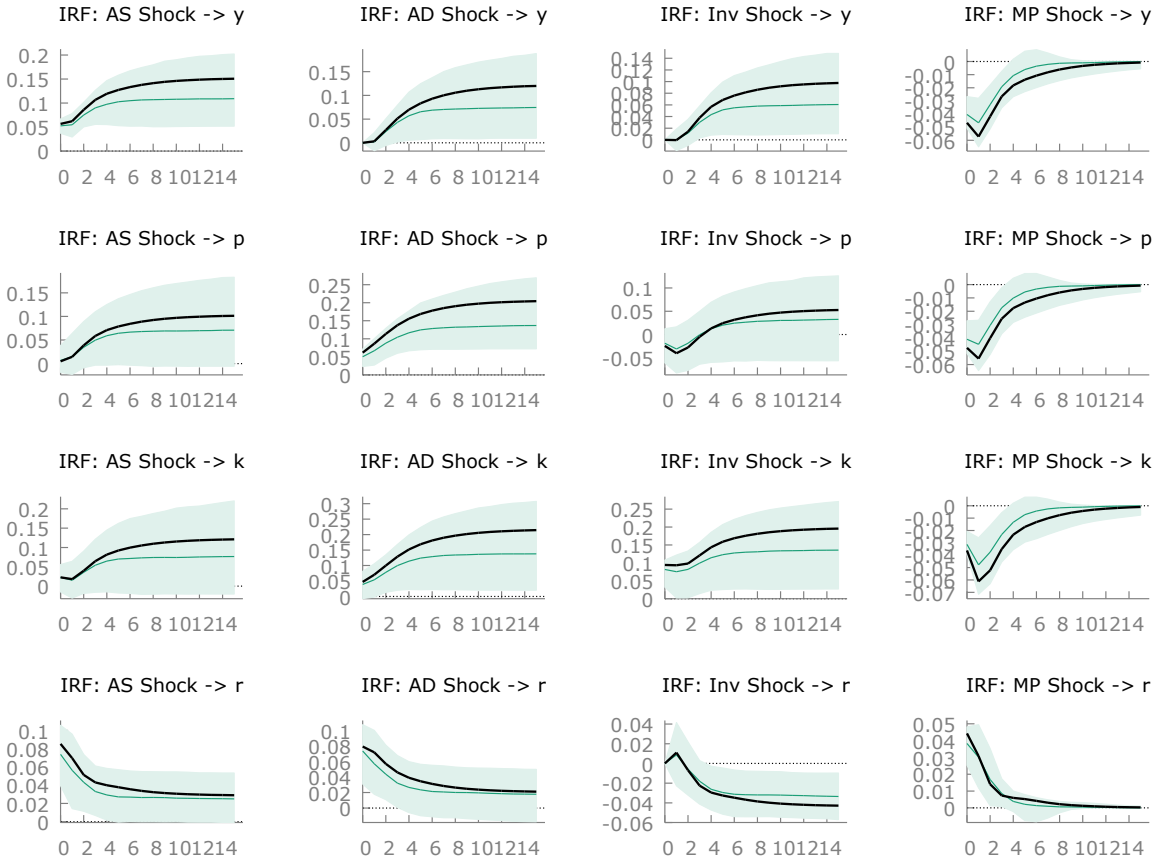

Figure 1: SVEC model structural impulse response function with 95% confidence interval

Figure 1 depicts the impulse response functions from the estimated structural VEC model, with the 95% confidence interval shown as the shaded area. The interpretations of the relevant variables are thoroughly discussed in the discussion section.

International Journal of Applied Research in Business and Management (ISSN: 2700-8983)
an Open Access journal by Wohllebe & Ross Publishing, Germany.
Volume: 06 Issue: 02 Year: 2025
https://doi.org/10.51137/wrp.ijarbm.2025.ciit.45815

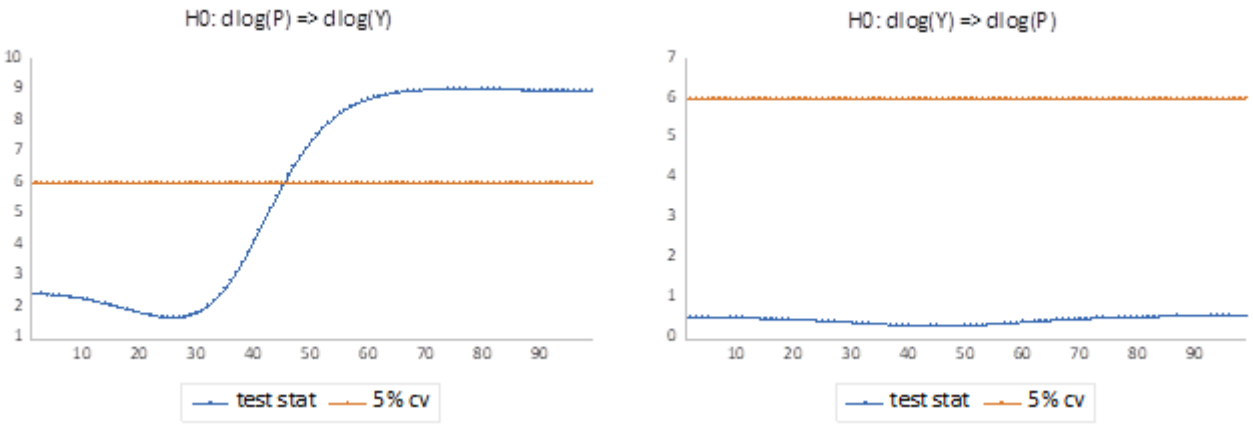

Figure 2: Breitung and Candelon frequency domain causality test

For a proper interpretation of the results in Figure 2, it is important to note that a shorter spectral frequency corresponds to a longer period. In other words, there is an inverse relationship between time and spectral frequency, which can be converted using the formula T= 2π/ώ, where *T* represents the period (e.g., yearly, monthly, daily) and *ω* is the spectral frequency ranging from 0 to π (0 to 100 on each graph). The general rule is that the null hypothesis is rejected when the test statistic (the blue line) lies above the critical value (the horizontal line); otherwise, it is accepted. From the first graph, it can be observed that the test statistic falls below the critical line in the long run (i.e., toward the zero frequency).

Discussion

From the long-run coefficients, it is evident that the general price level (inflation) exerts a statistically significant negative effect on real output (GDP) in the long run. Specifically, a one percent increase in the price level leads to a 1.57% decrease in output. This suggests that persistent inflationary pressures have a detrimental effect on economic productivity and output expansion, reinforcing the classical and monetarist positions that inflation, when unchecked, can distort investment decisions, reduce purchasing power, and hinder long-term growth (Abdullayevich & Olimjon o'g'li, 2024). This result also agrees with the findings of Idris and Suleiman (2019), Adaramola and Dada (2020), and Mandeya and Ho (2021) but contrast with that of Mavikela *et al*. (2019) and Kryeziu and Durguti (2019). In contrast, the interest rate is found to have a positive and significant impact on output in the long run in line with Onwubuariri *et al*. (2021). A one percent increase in the interest rate is associated with a 3.58% rise in output. While this result may appear counterintuitive, it suggests that in the Nigerian context, rising interest rates may reflect improved macroeconomic confidence and increased capital inflows, which can stimulate investment in productive sectors. Additionally, higher interest rates may enhance returns to savings, thereby boosting investment in physical capital over time. This implies that monetary policy tools, if well-calibrated, can support long-term growth objectives rather than solely being viewed through

International Journal of Applied Research in Business and Management (ISSN: 2700-8983)
an Open Access journal by Wohllebe & Ross Publishing, Germany.
Volume: 06 Issue: 02 Year: 2025
https://doi.org/10.51137/wrp.ijarbm.2025.ciit.45815

the lens of inflation control (Piani, 2025). Furthermore, the analysis shows that capital stock plays a critical role in output determination, with a one percent increase in the capital leading to a 1.72% rise in output. This finding is consistent with growth theory, particularly the Solow growth model, which emphasizes the importance of capital accumulation as a driver of long-term economic growth (Ogbeifun & Shobande). It implies that policy efforts to promote investment in physical infrastructure, machinery, and technology will yield positive and significant dividends for economic output in Nigeria.

Turning to the adjustment (error correction) coefficients, the results indicate that the system adjusts to deviations from the long-run equilibrium. The error-correction term associated with GDP suggests that about 7.7% of the disequilibrium in output is corrected within a year when GDP falls below its steady-state level. This moderate speed of adjustment implies that shocks to output do not persist indefinitely but are gradually corrected, supporting the stability of the long-run relationship. Similarly, the inflation equation adjusts by approximately 8.4% annually toward equilibrium, suggesting that inflationary shocks are also partly self-correcting over time. The capital variable adjusts at a slower pace, correcting about 6.6% of its deviation from equilibrium within a year, indicating a more sluggish adjustment process, possibly due to structural rigidities in investment and capital formation. However, the interest rate behaves differently. Instead of adjusting toward equilibrium, the interest rate exhibits divergence, moving 5.5% away from the equilibrium in response to a negative output gap. This divergence suggests that interest rate movements in Nigeria may not be primarily driven by output conditions, but perhaps by external factors such as global financial markets, exchange rate considerations, or policy inconsistencies. It indicates a possible lack of endogenous monetary policy response to domestic output shocks, which could reduce the effectiveness of interest rate policy in stabilizing the economy.

In the impulse-response result, it can be observed that aggregate supply shock significantly raised aggregate output above the steady state and has a permanent effect of around 0.15% above the normal level. This outcome indicates that supply-side improvements have a lasting positive impact on Nigeria's output, highlighting the importance of productivity-enhancing reforms. Similarly, it can be observed that aggregate demand shock significantly raised the general price level by about 0.06% on the impact above the steady state, implying that demand-side shocks tend to drive up prices in Nigeria, emphasizing the need for demand management policies that do not compromise price stability. Secondly, the result showed that real gross domestic product responds to aggregate demand shock positively; the aggregate demand shock brings about a 0.12% persistent deviation in real gdp above the steady state. On the other hand, aggregate supply shock insignificantly inflated price by about 0.01% on the impact above the steady state; this effect persistently raised the price level around 0.11% above the steady state but was insignificant. These results suggest that while demand-side policies can stimulate output growth in Nigeria, supply-side reforms carry less risk of triggering inflation, offering a strategic advantage for long-term, stable economic development.

International Journal of Applied Research in Business and Management (ISSN: 2700-8983)
an Open Access journal by Wohllebe & Ross Publishing, Germany.
Volume: 06 Issue: 02 Year: 2025
https://doi.org/10.51137/wrp.ijarbm.2025.ciit.45815

Furthermore, the real gross domestic product responds to investment shock positively; the investment shock brings about a 0.10% persistent deviation in real gdp above the steady state. On the contrary, the rising effect of investment shock on price level is insignificant. These results imply that policies geared toward stimulating investment are effective in boosting economic growth in Nigeria, without exerting inflationary pressures—thereby supporting the case for investment-led development strategies. The contractionary monetary policy shock (i.e., raising the interest rate unexpectedly) is shown to have a negative but transitory effect on the real gross domestic product and inflation; bringing about 0.05% deviation to both of them below the steady state on the impact. This finding suggests that abrupt monetary tightening can dampen output and inflation temporarily. Therefore, Nigeria's monetary authorities must adopt cautious and transparent interest rate policies to avoid unnecessary disruptions in economic activity while achieving inflation control.

The result showed that there is causality from inflation to economic growth only in the short and medium run. In other words, inflation causes economic growth in the short and medium term, but not in the long run. Conversely, in the second graph, the test statistic remains below the critical line across all frequencies, indicating that economic growth does not Granger-cause inflation at any frequency—short, medium, or long run.

Conclusion

This study examines the dynamic relationship between inflation and economic growth in Nigeria covering the period from 1981 to 2021. The objectives of the study are to examine the long-run impact of inflation on economic growth, examine the short-run adjustment process, and the direction of the causal relationship between them. Based on the empirical findings, there is evidence of a negative long-run relationship between inflation and economic growth in Nigeria. Also, interest rates and physical capital accumulation are significant economic growth drivers in the long run. All the variables, except the interest rate, significantly adjust towards the long-run inflation-growth path after an exogenous shock. Furthermore, the innovation accounting showed that the aggregate demand shock to inflation brings about a positive effect on gdp growth but the effect is only significant on the impact and aggregate supply shock to gdp is shown to bring about a positive effect on inflation and the effect persistently significant, unlike in the response of output to the aggregate demand shock. In addition, interest rate shock has a negative but transitory effect on economic growth meanwhile the investment shock to capital brings about a permanent positive effect on Nigerian economic growth. More so, interest rate shock has a negative but transitory effect on price whereas the aggregate demand shock to price brings about a positive and lasting effect on the interest rate. The causality test result showed that inflation granger causes economic growth only in the short and the medium run while economic growth does not cause inflation at any frequency, either in the short, medium, or long run. Based on these findings, it is

recommended that monetary authorities maintain moderate and stable inflation to support long-run growth while leveraging short-term demand shocks wisely. Also, policies that promote capital accumulation and investment should be prioritized to sustain long-term economic expansion. Lastly, interest rate policies should be carefully aligned with growth objectives to avoid adverse monetary shocks while supporting productive investment.

Based on this study, the main takeaways for practitioners are:

- Manage inflation prudently.
- Leverage interest rate policy cautiously.
- Promote capital accumulation.
- Structural reforms with short-term demand-side interventions can boost GDP growth.
- Strengthen the productive capacity to manage inflation effectively.
- Inflation has predictive power over economic growth.

References

Abderrahim F., Zakaria B., & Youness D. (2021). Impact of inflation on economic growth, the case of Morocco. *African scientific journal*, Vol *3*(9), 126. https://doi.org/10.5281/zenodo.5795095

Abdullayevich, S. G. I., & Olimjon o'g'li, B. Z. (2024). Achieving of sustainable economic growth as a result of reducing inflation in the country. *Web of Discoveries: Journal of Analysis and Inventions*, *2*(4), 56-67.

Adaramola, A. O., & Dada, O. (2020). Impact of inflation on economic growth: evidence from Nigeria. *Investment Management and Financial Innovations*, *17*(2), 1–13. https://doi.org/10.21511/imfi.17(2).2020.01

Agnor, P. R. & Montiel, P. J. (1996). *Development macroeconomics*. Princeton University Press, New Jersey

Anidiobu, G., Okolie, P., & Oleka, D.C. (2018). Analysis of inflation and its effect on economic growth in Nigeria. *IOSR Journal of Economics and Finance. 9*(1)*,* 28-36.

Bakare, H, Kareem, R., & Oyelekan, B. (2015). Effects of inflation rate on economic growth in Nigeria. *Developing Country Studies*, *5*(8), 2015, 153-160.

Barro, R. J. (1995). *Inflation and economic growth*. National Bureau of Economic Research (NBER) Working Paper No. 5326

Breitung, J., & Candelon, B. (2006). Testing for short-and long-run causality: A frequency-domain approach. *Journal of econometrics*, *132*(2), 363-378.

Candelon, B., & Hasse, J. B. (2023). Testing for causality between climate policies and carbon emissions reduction. *Finance Research Letters*, *55*, 103878.

Elias, A., Dachito, A., & Abdulbari, S. (2023). The effects of currency devaluation on Ethiopia's major export commodities: The case of coffee and khat: Evidence from the vector error correction model and the Johansen co-integration test. *Cogent Economics & Finance*, *11*(1), 2184447.

Fisher, S. (1993). The role of macroeconomic factors in growth. *Journal of Monetary Economics*, *32*, 488–512

Gavin, D.M.O. (2019). Inflation and economic activity in Suriname. *Journal of Economics Library*, *6*(3).

Gultekin, N. (1983). Stock market returns and inflation: Evidence from other countries. *The Journal of Finance*. *38*(1), 49-65.

Hill, A. D., Johnson, S. G., Greco, L. M., O'Boyle, E. H., & Walter, S. L. (2021). Endogeneity: A review and agenda for the methodology-practice divide affecting micro and macro research. *Journal of Management*, *47*(1), 105-143.

Idris, T. S., & Suleiman, S. (2019). Effect of inflation on economic growth in Nigeria: 1980‑2017. *MAJASS*, 18, 33-48.

King, R. G., Plosser, C. I., Stock, J. H., & Watson, M. W. (1991). Stochastic trends and economic fluctuations. *American Economic Review*, *81*, 819-40.

Kirkpatrick, C. and Nixon, F. (1987). *Inflation and stabilization policy in LDCs*. In: Gemmel, N. (Ed.), Surveys in Development Economics, Basil Blackwell, Oxford

Kryeziu, N., & Durguti, E. (2019). The impact of inflation on economic growth: The case of Eurozone. *Journal of Finance & Banking Studies*, *8*(1), 01-09.

Mallik, G. & Chowdhury, A. (2001). Inflation and economic growth: Evidence from four South Asian countries. *Asia-Pacific Development Journal*, *8*, 123-135.

Mandeya, S. M. T., & Ho, S.Y. (2021). Inflation, inflation uncertainty and the economic growth nexus: An impact study of South Africa. *MethodsX, 8,* 101501. doi:10.1016/j.mex.2021.101501

Mavikela, N., Mhaka, S., & Phiri, A. (2019). The inflation-growth relationship in SSA inflation-targeting countries. *Studia Universitatis Babes-Bolyai Oeconomica, 64*(2), 84-102.

Mundell, R. (1963). Inflation and real interest. *The Journal of Political Economy*, 280-283.

Ogbeifun, L., & Shobande, O. A. (2022). A reevaluation of human capital accumulation and economic growth in OECD. *Journal of Public Affairs*, *22*(4), e2602.

Okoroafor, D. O. K., Adeniji, S. O. & Olasehinde, T. (2018). Estimating and forecasting the impact of inflation on economic growth in Nigeria using threshold analysis. *CBN Journal of Applied Statistics 9*(1), 1-22.

Onwubuariri, S. E., Oladeji, S.I., Bank-Ola, R.F. (2021). Inflation and economic growth in Nigeria: An ARDL bound testing approach. *Sapientia Foundation Journal of Education, Sciences and Gender Studies (SFJESGS), 3*(1), 277-290.

Oyebanji, I. J., & Kleynhans, E. P. (2022). A SVEC model of monetary policy and international trade in Nigeria. *African Review of Economics and Finance*, *14*(2), 74-87.

Piani, A. (2025). *AI Explains: Surviving A Recession*. Blue Tensor LLC.

Saqib, M. (2024). Analyzing Inflation Dynamics in Pakistan: The new Keynesian Phillips curve perspective. *Journal of the Knowledge Economy*, 1-22.

Saungweme, T., & Odhiambo, N. (2021). Inflation and economic growth in Kenya: An empirical examination. No AERI0421, Working Papers, African Economic and Social Research Institute (AESRI).

Sidrauski, M. (1967). Rational choice and patterns of growth in a monetary economy. American Economic Review, 57(2), 534-544.

Tobin, J. (1965) Money and economic growth. *Econometrica*, *33*, 671-684.

Uddin, M. U. (2019). Dynamic inflation and economic growth nexus in Bangladesh. *Journal of Accounting, Business and Management*, *26* (2), 35-45.