

The Dynamic Interaction Between Fiscal Deficit and Inflation in Nigeria: Evidence from ARDL Bounds Test

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ABSTRACT

This study analysed the dynamic relationship between fiscal deficit and inflation in Nigeria from 1981 to 2024, with the aim of examining the link between these two macroeconomic variables. Economic indicators, including GDP growth, CPI inflation, fiscal deficit as a ratio of GDP, and exchange rate, were utilised in the analysis. Augmented Dickey–Fuller (ADF) and Phillips–Perron unit root tests were conducted to determine the order of integration of the variables. The results indicated that all variables were stationary at first difference, and the Auto-Regressive Distributed Lag (ARDL) bounds test was applied to investigate the short-run and long-run relationships between the variables of interest. The findings revealed that, in the long run, there was a positive but statistically insignificant relationship between fiscal deficit and inflation in Nigeria. Based on these findings, it was recommended that policymakers adopt fiscal and monetary discipline and moderate deficit financing to avoid persistent inflationary pressures that could negatively affect the purchasing power of Nigerians.

Keywords: Fiscal Deficit, CPI Inflation, Auto-regressive Distributed Lag (ARDL), Critical Limit Hypothesis, Demand-Pull Theory of Inflation

1. INTRODUCTION

The impact of fiscal deficits on inflation has long been debated in Nigeria, where high levels of government spending and borrowing have contributed to persistent budget deficits and inflationary pressures. Despite widespread concern, limited empirical analysis has been conducted on this relationship, resulting in an incomplete understanding of the drivers of inflation and the effectiveness of fiscal policy in controlling it. Nigeria's economic history reveals a volatile and severe inflationary problem, with rates reaching alarming levels in the 1970s, 1980s, and 1990s. As highlighted by Ekpo (2024), factors contributing to inflation in Nigeria include excessive public spending, increased aggregate demand, and supply constraints. Of particular interest is the role of fiscal deficits, as higher levels of government borrowing and money creation can potentially fuel inflationary pressures.

Understanding this relationship is critical for policymakers, as fiscal policy plays a central role in shaping the macroeconomic environment. Effective fiscal management—such as prioritising investments in productive sectors and maintaining sustainable borrowing levels—can help contain inflationary pressures while supporting economic growth and development. In addition to fiscal policy, monetary policy also plays a crucial role in managing inflation. Central banks use interest rate adjustments and other instruments to influence the money supply, control inflation, and promote economic stability.

In Nigeria, the Central Bank of Nigeria (CBN) has adopted various monetary policy strategies, including inflation targeting, to curb inflationary pressures. However, the effectiveness of these strategies has been questioned given the persistence of inflation in the country. The interplay between fiscal and monetary policies is complex, requiring policymakers to strike a balance between promoting economic growth and maintaining price stability. The relationship between fiscal deficits and inflation is not unique to Nigeria but has global relevance. Studies have shown that the interaction between fiscal policy and inflation varies across countries, depending on economic structure, political institutions, and macroeconomic policies. In highly indebted countries, fiscal deficits can increase borrowing, which may fuel inflation by creating excess demand for credit, raising interest rates, and depreciating the currency. Conversely, countries with sufficient fiscal space may implement expansionary fiscal policies to stimulate growth without necessarily triggering inflation.

In developing countries, fiscal deficits can have a more pronounced impact on inflation due to exchange rate volatility, limited economic diversification, and restricted access to international capital markets. Furthermore, the political economy of fiscal policy in such contexts is often challenging, as governments face pressure to prioritise spending on social programmes, infrastructure, and other areas essential for development and poverty reduction. This underscores the importance of well-coordinated economic policies that address the root causes of inflation and promote sustainable growth.

The dynamic interaction between fiscal deficit and inflation in Nigeria has been extensively studied, with varying conclusions regarding the nature and magnitude of the relationship. Macroeconomic stability is widely recognised as essential for sustained economic growth. Despite the implementation of various anti-inflationary measures since independence—including monetary, fiscal, and exchange rate policies—price stability has remained elusive, hindering economic progress. Inflation, characterised by a persistent and significant increase in prices, may yield short-term benefits such as increased profits and government revenues, but its long-term effects are detrimental to growth and development. Between 1970 and 1996, Nigeria experienced inflation rates ranging from 13.8% to 72%, driven by factors such as monetisation of oil revenue, worsening terms of trade, fiscal expansion, and currency depreciation. Addressing inflationary pressures is therefore critical to sustainable economic growth. Fiscal policy plays a key role in this regard, as fiscal deficits—often financed through debt or money creation—can increase the money supply, potentially leading to inflationary pressures.

In addition to examining the dynamic interaction between fiscal deficit and inflation, this research explores the potential channels through which the relationship manifests. Existing literature on the Nigerian case has produced mixed results due to differences in methodology, data sets, and time frames, leaving gaps in understanding that call for a more comprehensive study.

This study seeks to contribute to the literature by examining the dynamic relationship between fiscal deficit and inflation in Nigeria using the ARDL bounds test method. The aim is to provide a clearer and more reliable assessment of the impact of fiscal deficits on inflation. Specifically, the paper investigates whether fiscal deficits have had a significant influence on the Nigerian economy and whether they have contributed to achieving moderate inflation.

The Fiscal Conductors of Nigeria's Inflation: A Historical Reverberation

The Nigerian economy in the 1970s underwent significant changes with the onset of the oil boom. While the windfall from oil earnings initially enabled increased government spending, much of it was directed towards unproductive projects, contributing to inflationary pressures. In 1976, the fiscal deficit rose substantially from ₦427.9 million in 1975 to ₦1,090.8 million before declining slightly to ₦781.4 million in 1977. Between 1978 and 1981, the fiscal deficit fluctuated between ₦2,266.8 million and ₦3,902.1 million, reflecting sustained pressures on public finances and highlighting the challenge of maintaining macroeconomic stability during the oil boom.

During the 1970s, the fiscal deficit-to-GDP ratio averaged 2.5%, indicating a relatively moderate level of public borrowing, largely due to increased oil revenues that narrowed the fiscal gap. However, despite this revenue windfall, much of the government's spending went into ambitious but often unproductive projects. Coupled with the Nigerian Enterprises Promotion Decree, which sought to expand state

ownership and control of key sectors, these measures intensified inflationary pressures. The consequences were twofold: government spending fuelled inflation, contributing to widening disparities between prices and real wages, and state involvement in numerous sectors diverted resources from more productive uses, exacerbating structural imbalances and undermining competitiveness.

From 1978 to 1994, the fiscal deficit-to-GDP ratio increased sharply to an average of 14.5%, peaking at 19.3% during the nine years of the Structural Adjustment Programme (SAP). Despite these high deficits, inflation remained persistently elevated throughout the stabilisation and adjustment period, except in 1982, 1985, and 1986, when it temporarily declined (Ekpo, 2024). Concurrently, Nigeria faced other negative economic indicators, including declining oil revenues, balance of payments disequilibrium, and rising unemployment. This suggests that, despite SAP reforms, macroeconomic challenges persisted—possibly due to implementation difficulties, political constraints, or the failure to address deeper structural problems.

Although Nigeria did not experience foreign exchange constraints before 1977/78, it was later compelled to borrow from the Eurodollar market, indicating unresolved structural weaknesses. The austerity measures of the Obasanjo regime in 1976/77 focused largely on reducing government expenditure, creating fiscal imbalances without addressing underlying supply-side issues. Combined with recessionary trends—reflected in negative GDP growth between 1978 and 1986, except in 1979 and 1985—and high inflation, these measures failed to deliver lasting improvements.

The trend of increasing fiscal deficits and inflation persisted beyond the SAP era. In the late 1990s, Nigeria entered another debt crisis, which prompted the 2005 Highly Indebted Poor Countries (HIPC) debt relief initiative. In subsequent years, government borrowing to finance infrastructure and other projects increased public debt. Inflation remained relatively low until 2014, after which it began to rise, peaking at over 18%. By 2017, inflation reached around 20%.

In 2018, the government introduced the policy of dollarising import duties to curb inflation, but this increased commodity prices and reduced imports, adversely affecting businesses. In response, several monetary measures were implemented, including currency devaluation and the introduction of the Treasury Single Account (TSA) in 2020 to consolidate government revenue and limit extra-budgetary spending. Nevertheless, inflation remained a significant challenge, reaching about 21% in 2022.

The fiscal deficit also remained elevated, surpassing ₦6 trillion in 2021. The government pursued various fiscal and monetary interventions, including increased domestic and foreign borrowing, higher taxes, and the use of special intervention funds. However, these measures faced challenges relating to effectiveness, implementation, and political resistance, and inflationary pressures persisted.

The Trend of Fiscal Deficit and Inflation in Nigeria

The trend of fiscal deficit and inflation in Nigeria over the past four decades has been cyclical, as depicted in Figure 1. Periods of high inflation and large fiscal deficits have been followed by intervals of relative stability. The most recent phase of instability began in 2014, following a sharp drop in oil prices and the subsequent economic downturn. Since then, inflation has remained elevated, and the fiscal deficit has widened.

Over this period, Nigeria's fiscal deficit has ranged from a low of about 3% of GDP to a high of over 10%, with an average of approximately 5% of GDP. Inflation has been more volatile, fluctuating from below 5% to over 70%, with an average rate of about 30%. High fiscal deficits and inflation have exerted pressure on the exchange rate, contributing to the depreciation of the naira. This depreciation has increased the cost of imports, further fuelling inflation.

In addition, the high cost of borrowing has constrained business investment and expansion. The combined effect of persistent fiscal deficits and inflation has been a decline in living standards for many Nigerians. Between 1981 and 1990, inflation exhibited major fluctuations, while the fiscal deficit recorded steady growth, averaging 2.11%. From 1991 to 1995, inflation rose sharply to levels unprecedented in other years, while the fiscal deficit increased progressively but at a moderate pace. These developments have significantly eroded the purchasing power of Nigerians, leading to higher living costs. As a result, many households have found it increasingly difficult to afford basic necessities, pushing more people into poverty, including multidimensional poverty.

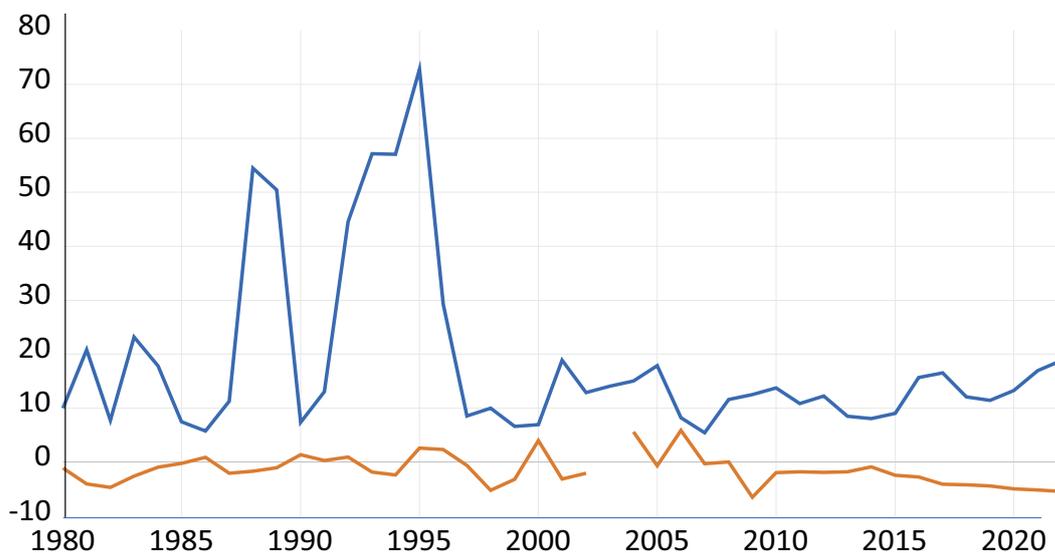


Figure 1: Fiscal deficit and inflation graph

Source: World Development Indicators (2024)

Interestingly, the continuous increase in fiscal deficit and inflation in Nigeria over the past few decades can be attributed largely to the reliance on oil revenue to finance government spending. Given the volatility of oil prices, any significant decline in prices results in reduced government revenue, creating a cycle of deficit spending and inflation. Another contributing factor is the poor management of public finances, which has led to high borrowing levels, increased debt servicing costs, and persistent poverty and inequality. These conditions generate demand for increased government spending on social programmes, which, in turn, can exacerbate fiscal deficits. This situation represents a serious violation of Colin Clark's (1953) critical limit hypothesis.

The trend shows that between 1985 and 2000, Nigeria's inflation rate experienced sharp fluctuations, falling to less than 6% at its lowest and reaching approximately 72% at its peak. During this period, fiscal deficits remained relatively low. However, between 2001 and 2022, inflation rates were generally lower than in the years before 2000, while fiscal deficits rose significantly. In the 1980s and early 1990s, fiscal deficits were relatively low and stable, with only minimal fluctuations. Furthermore, fiscal deficit levels remained comparatively steady in the years leading up to 2011.

2. REVIEWS OF THEORETICAL AND RELATED LITERATURE

2.1 Theoretical Framework

2.1.1 The Demand-Pull Theory of Inflation

Demand-pull inflation, also referred to as surplus demand inflation, occurs when an excess of money supply relative to the level of goods and services leads to competition and price increases. The theory proposes that demand for goods and services, driven by private consumers, businesses, and government spending, can outstrip supply, resulting in price increases. This type of inflation is commonly observed during periods of full employment and economic expansion when production factors are in high demand, driving up costs. Both the quantity theory of money (old and new) and Keynesian theory can help explain the phenomenon of demand-pull inflation. The former emphasises the relationship between money supply and price levels, while the latter underscores the role of aggregate demand in influencing prices. The Keynesian approach attributes the determination of inflation to non-monetary factors like government spending, consumer spending habits, and credit availability. In contrast, the monetarist approach, grounded in the quantity theory of money, emphasises the critical role of money supply in shaping inflation. Friedman, a leading monetarist, famously stated that inflation is always and everywhere a monetary phenomenon. This suggests that inflation occurs when the money supply grows faster than real output.

According to Fisher (1913), every transaction has both a buyer and a seller, and the total economic value of sales and receipts is equal to the number of transactions multiplied by the amount of money spent. Mathematically, this identity can be

illustrates the need for balanced government expenditure and taxation policies to avoid inflation and its adverse economic consequences.

2.3 Empirical Literature

Onwioduokit (1999) examined the causal link between inflation and fiscal deficit in Nigeria, finding that fiscal deficits influence inflation, but not vice versa. The study also revealed feedback effects between the two variables when GDP is considered, with the impact of fiscal deficits on inflation materialising after two years. This underscores the importance of monitoring both the sources of deficit financing and the economy's absorptive capacity. Similarly, Darrat (2000), using an error correction model (ECM) for Greece, also found that budget deficits exert a positive and significant effect on inflation—results consistent with Onwioduokit's findings and reinforcing the need for fiscal prudence.

Fischer, Sahay, and Végh (2002), in a study covering 94 countries, identified fiscal deficits as a major driver of inflation in high-inflation and developing economies. Magbagbeola and Adelokun (2003) extended this view in the West African Monetary Zone, finding that fiscal deficits, money supply, interest rates, exchange rates, and GDP all significantly influence inflation, emphasising the importance of coordinated fiscal, monetary, and exchange rate policies.

Catão and Marco (2003), using Structural Vector Autoregression (SVAR) on data from 107 countries, also confirmed that deficit financing fuels inflation in developing and high-inflation economies, though the relationship is weaker in low-inflation advanced economies. Rother (2004) found that discretionary fiscal policy volatility contributes to inflation volatility in OECD countries, while Tchokote (2004) reported both direct and indirect effects of deficit financing on inflation in Cameroon. In contrast, Mortaza (2006) argued that in developing countries, inflation is not purely monetary but often linked to fiscal imbalances and weak domestic policies, highlighting the need for country-specific approaches.

Studies from Pakistan (Mukhtar & Zakari, 2010) and Nigeria (Chimobi & Igwe, 2010) further illustrate varied outcomes. While Mukhtar and Zakari found no long-run link between fiscal deficit and inflation, Chimobi and Igwe reported that a 1% rise in fiscal deficit-to-GDP ratio increased money supply growth by 0.94%, potentially triggering inflation.

Habibullah, Cheah, and Baharom (2011) confirmed the inflationary impact of deficits across 13 developing Asian countries from 1950 to 1999. In contrast, Olusoji and Oderinde (2011) found no causal link between fiscal deficits and inflation in Nigeria, challenging conventional wisdom. Other Nigerian studies present mixed results: Oladipo and Akinbobola (2011) found inflation causes deficits, while Ezeabasili, Mojekwu, and Herbert (2012) linked inflation more closely to money supply than deficits.

Evidence from Sri Lanka (Hermantha, 2012) showed that a 1 percentage point rise in fiscal deficits relative to narrow money leads to an 11 percent point rise in inflation, while Bangladesh (Alfrin, 2013) emphasised integrating fiscal and demand-management policies to control inflation.

Later Nigerian studies, including Odim, Ngozi, and Lawrence (2014) and Umaru (2014), found mixed results—ranging from two-year lags in deficit–inflation effects to findings that interest rates, rather than deficits, drive inflation. Oseni (2015) noted that discretionary fiscal policy has short-term inflationary effects but long-term deflationary effects.

Anfolum, Yahaya, and Suleman (2015) found deficits increase inflation in Nigeria, while Fakher (2016) identified budget deficits, GDP, and exchange rates as key inflation drivers in six Asian economies. Ubi and Inyang (2018) found that Nigerian fiscal deficits boosted per capita income and growth but reduced inflation and employment.

More recent African-wide studies, such as Ahmad and Aworinde (2019), confirmed the inflationary nature of fiscal deficits, while Nigerian-specific research by Ibrahim, Mohamad, and Sallahuddin (2019) showed short- and long-term inflationary effects. Public debt studies (Shuaibu et al., 2021; Uko & Nsudoh, 2023) revealed differing impacts depending on whether debt is domestic or external.

Finally, Ekpo (2024) examined Nigeria from 1981 to 2022, finding a positive but statistically insignificant long-run relationship between fiscal deficit and inflation, a strong negative link between inflation and growth, and optimal thresholds of 2% deficit-to-GDP and 13% inflation for sustainable growth.

Overall, empirical evidence on the fiscal deficit–inflation nexus is **mixed and context-dependent**. While many studies find a positive relationship, others suggest a weak or no link, pointing to the importance of economic structure, policy coordination, and country-specific conditions. This study aims to address these inconsistencies using the ARDL bounds testing approach.

3. METHODOLOGY

3.1 Research Design

The study utilises both descriptive and quasi-experimental approaches in analysing the data, with the descriptive approach offering context and background by studying the trends and stylised facts of fiscal deficit and inflation. The quasi-experimental approach, on the other hand, merges theoretical considerations with empirical observations, resulting in a more nuanced understanding of the relationship between fiscal deficit and inflation in Nigeria.

With the selected timeframe spanning over four decades, from 1981 to 2024, this research provides a substantial period to analyse the long-run relationship between fiscal deficit and inflation in the country. Utilising a data set spanning four decades, the

study is able to identify and study the trends and patterns that have shaped the relationship between fiscal deficit and inflation in Nigeria.

The descriptive approach allows for a better understanding of the economic environment within which the relationship between fiscal deficit and inflation has evolved, providing a foundation for the quasi-experimental approach which combines theory and empirical data to offer a more holistic analysis.

3.2 Model specification

In a bid to test the relative explanatory power of fiscal deficit, the model specification of Ahmad and Aworinde (2019) with some modifications will be adopted.

$$INF = f(FD, EXR, GDPG) \dots\dots\dots(4.1)$$

The model can be transformed into the following econometric model

$$INF = \gamma_0 + \gamma_1 FD + \gamma_2 EXR + \gamma_3 GDPG + \mu \dots\dots\dots(4.2)$$

Where;

INF = Inflation rate, FD = Fiscal deficit, EXR = Exchange rate depreciation

GDPG = GDP growth

γ_0 = the fixed effect of the constant term, $\gamma_1 - \gamma_3$ = are the coefficients of the explanatory variables, and

μ = is the error term which captures the effect of the variables not included in the model.

Based on economic theory, the following should be expected

$$\gamma_1 > 0, \gamma_2 < 0, \gamma_3 > 0$$

The following ARDL representation of equation (4.2) will be estimated in order to test the existence of long run relationship between fiscal deficit and inflation:

$$INF_t = \gamma_0^i + \sum_{i=1}^k \gamma_1^i \Delta FD_{t-1} + \sum_{i=1}^k \gamma_2^i \Delta EXR_{t-1} + \sum_{i=1}^k \gamma_3^i \Delta GDPG_{t-1} + \gamma_4^i \Delta INF_{t-1} + \gamma_5^i \Delta FD_{t-1} + \gamma_6^i \Delta EXR_{t-1} + \gamma_7^i \Delta GDPG_{t-1} + \mu \dots\dots\dots(4.3)$$

Once the co-integrating relationship is established, the short run dynamics is also analyzed and the error correction model representation of the ARDL model is specified in equation (4.4) below:

$$\Delta INF_t = \gamma_0^i + \sum_{i=1}^k \gamma_1^i \Delta FD_{t-1} + \sum_{i=1}^k \gamma_2^i \Delta FD_{t-1} + \sum_{i=1}^k \gamma_3^i \Delta EXR_{t-1} + \gamma_4^i \Delta GDPG_{t-1} + \varphi Z_{t-1} + \mu \dots\dots\dots(4.4)$$

3.3 Procedure for Data Collection

To effectively analyse the relationship between fiscal deficit and inflation in Nigeria, the study employs secondary data collected from reputable sources such as the Central Bank of Nigeria Statistical Bulletin (CBN, 2022), the CBN Annual Reports and

Statements of Accounts from different years, as well as the World Development Indicators (WDI, 2022) and the National Bureau of Statistics (NBS, 2022).

3.4 Model Estimation Procedure

This research utilised the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) unit root tests to ascertain the order of integration of the time series variables. Once the order of integration was established, co-integration tests were applied to detect the presence of long-run equilibrium relationships. If the time series variables were of the order one (i.e., $I(1)$), the Johansen co-integration test was deemed appropriate for the analysis. The study leveraged the Autoregressive Distributed Lag (ARDL) bounds test approach advanced by Pesaran *et al.* (2001), which is based on an unrestricted error correction model. The ARDL approach has gained increasing favour in recent times due to its several advantages compared to other co-integration methods, such as Engle and Granger (1987) and Johansen and Juselius (1990). First, it exhibits superior statistical properties on small samples, which are commonly encountered in developing countries, where small data sizes are often a challenge. Second, the ARDL approach enables different variables to be assigned different lag lengths as they enter the model, offering a more nuanced perspective.

Third, unlike other methods which require variables to be integrated of order one ($I(1)$), ARDL can be employed regardless of whether the underlying variables are $I(0)$, $I(1)$, or fractionally integrated, providing greater flexibility. Finally, the ARDL approach involves a single-equation setup, which allows the estimation of both long-run and short-run parameters simultaneously. This overcomes the limitations associated with traditional single-equation models where fiscal deficit is treated as an exogenous variable.

Hosseini-Ali (2016) is among the numerous studies that have employed this approach to investigate the relationship between fiscal deficit and inflation. In this study, we utilise the ARDL technique as a robust tool to unravel and quantify the relationship between these two variables in the Nigerian context.

4 EMPIRICAL RESULTS AND DISCUSSION

4.1 Data Presentation and Analysis.

4.1.1 Descriptive Statistics

The descriptive statistics of the variables utilised in the study is presented in Table 4.1 below. It illustrates the overall performance of the Nigerian economy from 1981 to 2024. The following key insights were gleaned from the statistics:

Table 4.1 Descriptive Statistics

	GDPG	INF	FD	EXR
Mean	2.941577	19.06650	-1.514197	115.3247
Median	3.251681	12.87658	-1.900436	111.2313
Maximum	15.32916	72.83550	5.857085	425.9792
Minimum	-13.12788	5.388008	-6.526412	0.617708
Std. Dev.	5.341382	16.64080	2.862217	120.6438
Skewness	-0.796055	1.839591	0.707264	1.021852
Kurtosis	4.701703	5.277170	3.348146	3.166577
Jarque- Bera	9.277290	31.98323	3.625246	7.182640
Probability	0.009671	0.000000	0.163225	0.027562
Observa- tions	41	41	41	41

Source: Author's Computation Using EViews 12

- GDP growth: Despite a mean value of 2.94%, the economy experienced significant volatility (standard deviation of 5.3%) and multiple periods of recession due to global shocks and disruptions.
- Inflation rate: With a mean value of 19%, the inflation rate displayed high volatility (standard deviation of 16.6%), and the majority of values were above the average, suggesting a lack of adequate measures to control inflation or discrepancies in inflation rates across different sectors.
- Fiscal deficit as a percentage of GDP: While exhibiting relative stability (standard deviation of 2.86%), the mean value of 1.5% was higher than the median, indicating that government spending had consistently exceeded revenue, potentially due to increased spending on social investment programmes and security.
- Exchange rate: The average value of N115 against the US dollar was highly volatile (standard deviation of N120.6), with a median value lower than the mean, suggesting that the naira was consistently undervalued compared to the average.

The kurtosis results indicate that GDP growth, inflation (INF), fiscal deficit (FD), and exchange rate (EXR) are leptokurtic in nature, as they exhibit values greater than three (3). The leptokurtic distribution of all the variables suggests that the entire observation is close to the average, with no extreme outliers. This indicates a relatively

stable economic environment and, as such, can be beneficial for policymakers, as it allows for more accurate forecasting and better planning.

However, the non-normality of fiscal deficit (FD) as revealed by the Jarque-Bera test suggests that the variable may require closer scrutiny and potentially more interventionist policies to ensure it does not cause significant economic disruptions. Meanwhile, the relatively stable distributions of GDP growth, inflation (INF) and exchange rate (EXR) are positive indicators that these key economic factors have been relatively consistent over time, suggesting that policies and interventions in these areas have been relatively effective in maintaining stability. These initial findings shed light on the general performance of the economy and serve as the foundation for the subsequent analysis of the relationship between fiscal deficit and inflation.

4.1.2 Unit Root Test

Although the Autoregressive Distributed Lag (ARDL) approach does not necessitate pretesting variables for stationarity (unit root), the Augmented Dickey Fuller (ADF) Unit Root Test was deemed necessary to verify whether the time series displayed a stationary trend or were non-stationary, and if so, to determine the order of integration.

Table 4.2: ADF Unit Root Test Results.

Variable	ADF Statistic At Level	ADF Statistic At 1st Difference	Integration Order
FD	-4.762859***	_____	I(0)
INF	-3.844173**	_____	I(0)
GDPG	-2.855478	-12.08960***	I(1)
EXR	2.953701**	_____	I(0)

Source: Author's Computation Using EViews 12

*Note: *** significant at 1%, **significant at 5%, -4.192337 and -3.520787 are critical values at level for 1% and 5% respectively while -3.600987 and -2.935001 are critical values at first difference for 1% and 5%, respectively.*

However, due to the potential presence of structural changes during the study period, the ADF test may produce biased results when identifying variables as integrated. To address this limitation, the study also employed the Phillips–Perron (PP) test, which accounts for the possibility of structural breaks at unknown points in time. By endogenising the potential presence of structural breaks, the PP test provides a more robust analysis of time series properties.

The combination of the ADF and PP tests enables a comprehensive assessment of the stationarity of the variables included in the ARDL model, ensuring that the subsequent analysis of the relationship between fiscal deficit and inflation is based on robust and reliable data.

The results of the ADF unit root test show that all variables, except GDPG, passed the unit root test at the 5 per cent level of significance in their level form. However, all variables passed the test for stationarity in their first-difference form.

The results of the PP unit root test differ slightly, indicating that all variables passed the unit root test at the 5 percent level of significance in their level form. The disparity between the ADF and PP results suggests the possible influence of a structural break in the first objective model. Consequently, the Phillips–Perron unit root test results are adopted.

4.2 Findings

4.2.1 Co-integration Test Analysis.

Having established that all the variables in the model are $I(0)$ variables, we need to know whether using them together in the model would yield reliable results through the co-integration test. In other words, it is imperative to examine further if there is a likelihood of a long-run relationship among the variables. As soon as this is established, it indicates that although some of the variables exhibit a random walk, there is a stable long-run relationship amongst them and that the randomness will not make them diverge from their equilibrium relationship.

Table 4.4: Bounds Test for Existence of Cointegration.

Test Statistic	Value	Significance	I(0) bound	I(1) bound
F-Statistic	4.487776	10%	2.72	3.77
K	3	5%	3.23	4.35
		2.5%	3.69	4.89
		1%	4.29	5.61

Source: Author's Computation Using EViews 12.

From Table 4.4 above, the result of cointegration shows that the computed F-statistic of 4.487776 exceeds the lower and upper bounds critical values of 3.23 and 4.35, respectively, at the 5 per cent significance level, using Pesaran *et al.* (2001). On this note, the null hypothesis of no cointegration is rejected, implying that INF, FD, EXR and GDPG have a long-run relationship.

4.2.2 Correlation Matrix Results.

The correlation analysis is used to determine the strength of the relationship between the variables in the model.

Table 4.5: Correlation Matrix

	INF	FD	EXR	GDGP
INF	1			
FD	0.099026	1		
EXR	-0.272409	-0.407930	1	
GDGP	-0.205591	0.311976	0.138237	1

Source: Author's Computation Using EViews 12.

From the above table, the highest correlation is between exchange rate and fiscal deficit, and the lowest correlation is between fiscal deficit and inflation. The rest of the correlation coefficients maintain values of between 0.138 and 0.206, which are accepted to avoid the problem of multicollinearity. Furthermore, all the explanatory variables are negatively correlated with the dependent variable (inflation) except the fiscal deficit.

4.2.3 Long Run Regression Result

The long run estimated coefficients are presented in Table 5.6.

Table 4.6: Estimates of the Long Run Coefficient ARDL Dependent Variable: INF

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FD	0.63517	0.994422	0.638737	0.5286
EXR	-0.075118	0.022952	-3.272786	0.0030
GDGP	-1.896896	0.817029	-2.321698	0.0284

Source: Author's Computation Using EViews 12

The results of the long-run relationship in Table 5.6 show that all the variables align with economic theory. In other words, fiscal deficit, GDP growth rate, and exchange rate have the expected signs.

Although statistically insignificant, the fiscal deficit exhibits a positive relationship with the inflation rate. This implies that a one per cent increase in the fiscal deficit raises the inflation rate by about 0.635 per cent in Nigeria.

The exchange rate shows a statistically significant long-run negative relationship with the inflation rate. This means that a one per cent depreciation of the naira (increase in the exchange rate) reduces the inflation rate by about 0.075 per cent. This result is unsurprising, as the Central Bank of Nigeria has, over the years, used the monetary policy rate (MPR) to control inflation, which in turn influences the interest rates charged by banks on loans to businesses and individuals.

Similarly, the GDP growth rate, a measure of economic growth, shows a significant and negative relationship with the inflation rate in the long run. Its coefficient indicates that a one per cent increase in economic growth reduces the inflation rate by about 1.897 per cent in Nigeria.

4.2.4 Short Run Regression Result

The short run estimated coefficients are presented in table 5.7

Table 4.7: Estimates of the short Run Error Correction.

variable	Coefficient	Std. Error	t-Statistic	Prob.
	29.64023	6.779968	4.371737	0.0002
(INF(-1))	0.611185	0.173731	3.518003	0.0016
(INF(-2))	-0.099739	0.154619	-0.645062	0.5245
(INF(-3))	0.378951	0.153219	2.473269	0.0202
(GDPG)	-1.021980	0.473403	-2.158794	0.0403
(GDPG(-1))	-0.842037	0.487684	-1.726604	0.0961
(GDPG(-2))	-1.460620	0.455817	-3.204403	0.0036
CM(-1)*	-0.822508	0.183816	-4.474638	0.0001
-squared	0.612187	Adjusted R	-squared	0.518577

Source: Author's Computation Using EViews 12.

The results reveal that the estimated lagged error correction mechanism ($ECMt-1_{\{t-1\}}$) is negative and highly significant at the one per cent level. This is consistent with the cointegration among the variables represented by equation 3.4.

The feedback coefficient is -0.82 , indicating a high speed of adjustment to equilibrium after a shock. Approximately 82 per cent of the disequilibrium from the previous year's shock converges to the long-run equilibrium in the current year. Notably, the fiscal deficit, a key variable, appears not to have a long-run relationship with inflation in Nigeria.

The R-squared value of 0.612187 and the adjusted R^2 value of 0.518577 indicate that about 61 per cent of the variation in inflation (INF) is explained by the current and one-year lag of GDP growth (GDPG).

Both the long-run and short-run equations show that all the variables align with economic theory. In other words, fiscal deficit, GDP growth rate, and exchange rate have the expected signs. Although statistically insignificant, the fiscal deficit displays a positive relationship with inflation. This finding is consistent with the works of Onwioduokit (1999), Darrat (2000), Catao and Macro (2003), Rother (2004), Tchokote (2004), Chimobi and Igwe (2010), Habibulah, Cheah and Baharom (2011), Ezeabasili, Mojekwu and Herbert (2021), Anfofum, Yahaya and Suleman (2015), Ahmad and Aworinde (2019), and Ibrahim et al. (2019). However, it contradicts the findings of Ozurumba (2012), whose study reports a negative relationship. Nonetheless, this result is in line with Keynesian theory.

The exchange rate shows a statistically significant long-run negative relationship with inflation, contradicting the findings of Ezeabasili, Mojekwu and Herbert (2012). This result is unsurprising, as the Central Bank of Nigeria has, over the years, used the monetary policy rate (MPR) to control inflation, which in turn affects the interest rates charged by banks on loans to businesses and individuals.

Similarly, the GDP growth rate, a measure of economic growth, has a significant and negative long-run relationship with inflation. This supports the findings of Anfofum et al. (2015) and Ahmad et al. (2019).

On the relationship between fiscal deficit and inflation, the following major findings were observed.

- I. Fiscal deficit, albeit statistically insignificant, exerts a positive relationship with inflation in the long-run in Nigeria. Notably, there is no short-run relationship between fiscal deficit and inflation.
- ii. Exchange rate shows a significant negative relationship with inflation in the long-run in Nigeria.
- iii. Economic growth shows a significant negative relationship with inflation in both short-run and long-run in Nigeria.

5. CONCLUSION AND RECOMMENDATIONS

This paper examined the relationship between fiscal deficit and inflation in Nigeria from 1981 to 2024, employing ARDL bounds testing. The findings reveal no statistically significant long-run relationship between fiscal deficit and inflation.

Based on the major findings of the study, the following recommendations are proposed:

- i. As fiscal deficit shows a positive relationship with inflation in the long-run, the government should moderate deficit financing. Prolonged fiscal deficits are likely to raise inflation, thereby eroding the purchasing power of Nigerians.
- ii. Government officials and policymakers should uphold both fiscal and monetary discipline to foster sustainable economic growth in Nigeria.
- iii. The government should take concrete steps to reduce the cost of governance, thereby lowering fiscal deficits. This can be achieved, for instance, by merging ministries and agencies with overlapping functions.

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