# EMPIRICAL ASSESSMENT OF TAX REVENUE AND INFLATION RATE NEXUS IN NIGERIA

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## ABSTRACT
The effect of tax revenue on inflation rate in Nigeria was examined utilizing the autoregressive distributed lag model on data spanning the period, 1986-2022. In order to have deeper insight into the relationship between the variables, we decomposed tax revenue into value added tax, petroleum profit tax, gas income tax, company income tax and stamp duty tax. The model was utilized primarily for the long run dynamic approach and the contemporaneous unrestricted error correction technique of short run estimations. It was discovered by the study that evidence of equilibrium long run relationship exists between inflation rate and tax revenue in Nigeria. Specifically, the study found in the long run that while tax revenue from gas income, company income and petroleum profit showed negative influence on inflation rate and at the same time value added tax and stamp duty tax exerted positive relationship, no evidence of statistical significant relationship was established. However, in the short run a significant direct relationship existed between inflation rate, gas income tax and company income tax contrary to significant negative influence from stamp duty tax, value added tax and petroleum profit tax during the period of analysis. It was therefore the recommendation of the study that domestic increase in prices of petroleum products should not be encouraged while corporate income tax for SMEs should be kept low. Finally, a reduction in VAT is advocated for goods of necessity such as pharmaceutical products.
**Keyword:** Tax Revenue, Inflation Rate, ARDL Model, Nigeria.
**JEL:** E31, H21.

## 1. INTRODUCTION
The debate surrounding the issue of tax revenue and inflation is crucial to the growth of an economy as taxation constitutes a major source of government finance. On the contrary, inflation erodes the purchasing power of money. This is due to the fact that a number of transactions, whether for taxes or goods and services, are predicated on the use of money in an economy and this made economic activities to be affected during inflationary period. Notably, the basic unit of measurement in the payments of taxes is money which are normally paid with lags thereby causing the value of taxes paid to decrease over time. This problem is further compounded in that the monetary unit employed in computing the tax bases usually depreciate as time passes most especially during period of inflation when money losses value. Between the periods when taxes are assessed and when payments must be made time lag interval are established for most tax statutes and it will be appropriate to allow tax payers to correctly calculate their tax liability (Adegbite, 2019).It is for this reason that some economies provide the opportunity for the taxpayers to request for any deferral in the payment process. However, with lags in tax collection couple with rising inflation, the generating ability inherent in the system of tax revenue is weakened. Essentially, this affects the ability of the economy to

generate substantial revenue through the tax system occasioned by rising cost of collection lags. This is an issue with several tax authorities most especially sub-Sahara Africa (SSA) countries in particular and developing countries in general (Nalyanya, *et a.,l* 2020; Osamor, *et al.*,2023).

In any country, the volume of infrastructural development undertaken is premised on the amount of revenue generated from all income sources in which taxation is a major channel. Taxation in an economy such as Nigeria is important because of its ability to raise capital necessary to stir up crucial indices of growth encompassing the private and the public sectors. Also, it is a key policy tool that can be relied upon to regulate the consumption pattern thereby ensuring effective redistribution of income and economic stabilisation (Anichebe, 2015). For this reason, the Nigerian government has attempted different reforms aimed at strengthening the tax system and as a result the Federal Ministry of Finance was created in 2002 while the Federal Board of Inland Revenue which was earlier established in 1943 was renamed Federal Inland Revenue Service in 2007. Accordingly, several reforms which aimed to address the various aspects of taxation such as value added tax, custom and excise duty tax as well as personal income tax among others have been carried out by the government. The provision for tax collections affords the government the opportunity to generate substantial revenue to undertake its numerous responsibilities of providing infrastructural amenities to the citizens (Ayeni&Omodero, 2022).

In recent time, rising prices of goods and services particularly food inflation have assumed a disturbing dimension for which both internal and external factors are responsible namely, the post covid-19 pandemic, the Russian-Ukraine war with its disrupting effects on food supply chain and most importantly the recent subsidy removal on petrol (Tukur, *et al*., 2023).Inflation is a key macroeconomic variable whose effect on the economy cannot be ignored. According to Adeleye, *et al*., 2024), the extent the variation in exchange rate impacts the economy is similar to inflation rate variation both of which affect the economy in a substantial fundamental ways which include but not limited to declining manufacturing output (Ihugba, *et al.*, 2023), rising unemployment (Adeniyi, 2023) as well as government trade deficit, demand and supply for currencies and so on. To guide against these unpalatable consequences for the economy, Asuzu and Anyanwu (2023) submitted that attainment of non-inflationary growth should be the target of monetary policy. According to statistics from the CBN, inflation rate remains moderate at mostly single digit between 2014 and 2015 and a mixture of both single and double digits between 2003 and 2013. The double digit inflation during this time hovered around 10-13% with exception of October 2003 to May 2004 where the rate of inflation recorded average of 20%. However, inflation skyrocketed from 2016 amidst recession occasioned by economic and financial crises. It became worse in 2023 as it recorded 28.9% in December before jumping to 34.2% in June 2024. Some people have identified some factors as responsible for the rising inflationary trend namely, the free floating in the naira exchange rate and the recent fuel subsidy removal forcing the naira to decline to over ₦1900/$ by March 2024. The third factor is the fiscal policy stand of the government which saw taxes rising significant thereby increasing cost of production leading to food and commodity price increases (Onabote, *et al*., 2023).

This situation resulted in macroeconomic imbalances for the economy with concomitant impact on interest rate, exchange rate and so on which have not perform very well. For instance, inflation rate which stood at 8.7% in 2015 rose to 19.8% in 2022. According to the National Bureau of Statistics (2024), food inflation which has rose astronomically since January 2024 slow down to 34.2% in June, 33.4% in July and further to 32.2% in August 2024, a development occasioned by the constant depreciation of the naira and the recent subsidy removal on petrol. Accordingly, the rising prices of foods and the general inflation rate led to deterioration in the

level of unemployment situation. On the contrary, the profile of government revenue is made up non-oil and oil revenue where the later contributes about 90% of government revenue while non-oil contributes the balance of 10%.Accordingly, the revenue of government averaged ₦938.0 billion between 2010 and 2022 with the peak at₦1837.5 billion in the third quarter of 2022 and a record low of ₦498.5 billion in the second quarter of 2015. Available statistics from the World Bank (2022) indicated that the largest contributor to GDP is the oil sector with 7.1% in the 4th quarter of 2018 which increased to 9.8% in the 3rd quarter of 2019. Meanwhile, by the last quarter of 2020 the contribution from the oil industry had declined to 5.9% representing 3.0% decrease when compared to 3rd quarter of 2020. However, the oil sector contribution to GDP witnessed an increase of 6.3% by the 3rd quarter of 2022.

The aim of the study therefore is to scrutinize to what extent inflation rate is affected by changes in tax revenue in Nigeria. Accordingly, the reminder of the paper is structured as follows. The review of relevant literature is contained in section two while the method of study is outlined in section three. In section four, the findings of the study are presented and discussed while section five contains the concluding remarks.

## 2. LITERATURE REVIEW

There is a strong connection between inflation rate, taxation and the level of external reserves. This is predicated on the fact that when government raises the tax rate the effect either increases cost of production leading to increase in prices of goods and services or reduces disposable income resulting in declining demand and fall in inflation, all of which affect key macroeconomic indicators such as exchange rate, interest rate and the level of external reserves (Adama, *et al*., 2022).In his view, Prati (2024) submitted that most evaluations carried out empirical studies to ascertain the trend of inflation rate with emphasis at the national level and little or no consideration for the level of inequality in inflation rate in the local economy. He advocated for the relaxation of the assumption that homogeneous inflation rate constitutes an impediment to heterogeneous consumers but stressed that emphasis should be on the relationship between changes in price level and satisfaction arising from living standards.

### 2.1 Theoretical Literature

In recent time, one of the reasons for increasing taxes is the belief by the government that it can be used to fight inflation. This belief is anchored on the supply side theorists. These supply side economists affirmed that during period of inflation, as the rate of taxes is increased this will help to reduce the private sector expenditure thereby reducing pressure on the market and inflation will be curtailed. Increases in taxes reduce demand implying that consumers will have less money to spend resulting in deflationary tendency. However, cuts in taxes are expected to increase consumers spending leading to inflation in the economy. Meanwhile, there are those who believe that increases in taxes result in rising costs of production and producers will try to shift the burden to the consumers in the form of indirect taxes (Aiyedogbon&Ohwofasa, 2014; Adegbite, 2019).

Also, there is the theory of the traditional tax handle which was the brain work of Solow and Swan (1956). The theory posited that economic development will occur in relation to fiscal need in the economy system. They then argued that the ability of the economy to generate national income through taxes is anchored on the growth level of per capita income. The authors further submitted that the compulsory nature of tax made it possible for the government to take over the purchasing power of the households for its use. In a similar vein, the theory by Arthur Laffer propounded in 1979 focused on the response of government revenue to changes in tax rate. According to the theory, the lowest and highest extreme tax revenues which lie

between 0 and 100% that are generated in any fiscal operations need being taken into consideration. The Laffer theory opined that a tax rate fixed at 100% acts as disincentive and will not raise any amount just the same way 0% rate of tax will yield no revenue. Comparatively, at a high extreme tax rate of 100% a rational tax payer is discouraged to earn further income that will attract very high taxes making the revenue raised to be 100% of nothing. To this end, a consensus on rate must be reached that will neither be too extremely high nor too low in order to maximize the collections of tax revenue (Gahvari, 1989).

## 2.1 Empirical Literature

There are copious empirical studies that seek to ascertain the relationship between inflation rate and tax revenue in the extant literature and mixed findings have been uncovered. To this end, Anichebe (2015) employed data covering the period 1981-2012 using granger causality, co-integration and ordinary least squares (OLS) to assess the influence tax policy has on inflation in Nigeria. Essentially, evidence of long run equilibrium relationship was established by the study. Specifically, the study found that impact of personal income tax on inflation is negative and significant while company income tax, property tax as well as consumption tax exerted significant positive influence. Also, the study observed an evidence of unidirectional causality that runs from tax components to inflation. It was suggested by the study that tax policy may be considered as a means of controlling inflation by policy makers.Olaoye (2016) appraised the determinants of inflation using value added tax and interest rate as the regressors which cover the period, 1990-2012. The study employed multiple regression technique and found that value added tax had significant positive influence on inflation both in the short and long runs. The study recommended a policy of anti-inflationary measure to cushion rising price tendencies occasioned by value added tax in the Nigeria.Ezu (2016) averred that rising tax revenue normally leads to increase in economic growth. His study which employ OLS on data from Nigeria spanning 2000-2013 assessed to what extent tax revenue affect the performance of macro-economic variables. The study developed five models thereby having five dependent variables which include interest rate, gross domestic product, exchange rate, inflation and government spending. On the contrary, the explanatory variables include property and consumption income tax, personal income tax, total tax revenue and company income tax. The study utilized the OLS technique and findings indicated evidence of positive and significant effect of company income tax on economic growth in the period of analysis. However, the study failed to establish any relationship between tax revenue and inflation in Nigeria.

Meanwhile, Atsu,*et al*., (2017) investigated the influence tax revenue had on macroeconomic variables in Nigeria covering the period 1986 to 2015. The tax revenue components employed for the study include value added tax, petroleum profit tax, company income tax and personal income tax while price stability and employment rate were made as the dependent variables respectively. The study which employed the ARDL model found that equilibrium long run relationship exists between the tax components and the two chosen macroeconomic variables. Although, whilst the study could not establish any relationship between price stability and tax revenue in the long run period, the short run findings showed evidence of significant positive influence of company income tax on price stability while petroleum profit tax, personal income tax and value added tax exerted negative and significant effect. In a study by Wang and Han (2018) using China data for the period 2001-2016, they argued that most goods are in short supply while the key elements of inflation and rising prices is predicated on the action of the state in excessive issuance of trade surpluses and currencies. Their study found a single causal relationship between taxes and rising price running from government taxation to inflation.Obaretin and Akhor (2019) appraised the extent taxation is used as a fiscal tool in addressing inflation issue in Nigeria covering the period, 1994-2014. Employing the error

correction model the findings indicated that custom and excise duty tax, company income tax and value added tax had positive significant impact on inflation in the period of consideration. The paper suggested that taxes should be designed in such a way as to address the issue relating to inflations in Nigeria.

In Kenya, Shivanda and Obwogi (2018) scrutinized the relationship between tax revenue and macroeconomic variables covering the data period 1995-2016. Exploring the ANOVA technique, findings indicated evidence of statistical insignificant relationship between tax revenue and inflation while exchange rate and interest rate were found to be key macroeconomic variables influencing collection of taxes in Kenya. In a related study, Adegbite (2019) assessed the extent instruments of fiscal policy affect inflation in Nigeria covering 1970-2017.The study modeled inflation as a function of custom and excise duty tax, petroleum profit tax, corporate income tax and value added tax. Utilizing Johasen co-integration and vector error correction model, it was found out by the study that tax revenue had negative but significant effect on inflation rate in Nigeria. In Spain, Mirovic, *et al*., (2019) appraised the impact of tax revenue on selected macroeconomic variables using data covering 1996 to 2016. These variables were property tax, corporate income tax, and personal income tax as well as social security contributions. The dependent variables include unemployment, per capita GDP, inflation, investment spending and government expenditures used to represent the five models. Among other things, the study found the presence of insignificant tax structure on inflation in that inflation is more closely related to indirect taxes rather than direct taxes.

Meanwhile, Nalyanya, *et al*., (2020) scrutinized the extent at which tax revenue affected macroeconomic variables spanning the period 2008-2018 in Kenya. The estimations were conducted using co-integration and error correction mechanism for the long and short run periods respectively. Accordingly, the study found evidence of statistical negative but significant relationship existing between inflation and tax revenue in Kenya. The study advised policy makers to make careful selection of macroeconomic variables as strong mechanism in mobilizing resources for the country's revenue.Ajeigbe, *et al*., (2023) studied how tax revenue and expenditure affected sustainable development goals using 45 selected African and developed countries between 2010 and 2020. The results from GMM technique revealed that economic growth is positive and significantly responsive to changes in grants, various forms of taxes and other similar revenue but with negative responses to changes in unemployment and poverty. Observably, moderate inflation is necessary for achievement of sustainable development goals. However, this finding is contrary to Onabote, *et al.*, (2023) who could not find any connection existing between inflation, government sectoral spending and human capital. In Indonesia, Meita and Nurdiniah (2023) examined to what extent corporate income tax rates, interest rates and inflation rate affected tax receipts spanning the data period of 2012-2021. Exploring the OLS technique, the study found no significant effect of interest rate on tax revenues. However, an evidence of positive and significant relation exists between tax revenue and inflation rate.

Using common method variance, Prati (2024) found that consumer relative well-being is proportionately affected by relative changes in the prices of goods and services and as a result the well-being cost arising from rising inflation is likely to be underestimated when aggregate figures are being considered.Apinoko, *et al*., (2024) examined the influence value added tax, company income tax, custom and excise duty tax and petroleum profit tax exerted on some macroeconomic variables among which include inflation rate. The study utilized data for the period 1985-2021 and employed the ARDL model estimation technique in assessing the relationships respectively. The study confirmed evidence of co-integration relationship.

Likewise, the study found that in the short run company income tax and value added tax exerted positive and significant influence on inflation rate in Nigeria. Therefore, the study argued that consideration for inflation must be put into cognizance when deciding adjustment in taxes.

### 2.3 Gap in the Literature and Value addition

Although, the relationship between inflation and tax revenue is important for the growth of an economy, only a handful of studies exist in the literature in the case of Nigeria (Adegbite, 2019; Obaretin&Akhor, 2019; Apinoko, *et al*., 2024). Likewise, a number of prior studies in Nigeria focused only on value added tax, company income tax and petroleum profit tax (Yahaya&Bakare, 2018; Ayeni, &Afolabi, 2020; Osamor, *et al*., 2023). The current study disaggregated further by adding stamp duty tax and gas income tax. Accordingly, the current study is undertaken as part of larger research agenda with intent to contribute to the extant literature and broaden the existing body of knowledge.

## 3. METHOTHODOLOGY

### 3.1 Theoretical Framework

The theoretical underpinning for the study is the traditional tax handle which argued that economic development dictates the level of fiscal need which comprises of various macroeconomic variables of which inflation is relatively more pronounced. Accordingly, inflation is made as a function of tax revenue and is decomposed into stamp duty tax, petroleum profit tax, gas income tax and value added tax as well as company income tax.

### 3.2 Model Specification

The study specified a linear model similar to Olaoye (2016), Ajeigbe, *et al*., (2023) and Apinoko, *et al*., (2024) in the investigation of the nexus existing between inflation rate and tax revenue in Nigeria covering the period of 1986-2022 as follows.

$$INF_t = (PPT, VAT, CIT, GIT, SDT) \quad \text{.....(1)}$$

In stochastic log term, equation 1 can be estimated as follows:

$$InINF_t = \alpha_0 + \alpha_1 InPPT_t + \alpha_2 InVAT_t + \alpha_3 InCIT_t + \alpha_4 GIT_t + \alpha_5 SDT_t + \varepsilon_t \quad \text{.....(2)}$$

Where:

INF = Inflation rate, PPT refers to taxes from petroleum profit, CIT is defined as taxes from company income, VAT = taxes from value added of a product, GIT = gas income tax, SDT stamp duty tax. α0, α1-α5 are the constant and parameters to be estimated respectively while εt is white noise error. Apart from inflation which is rate, a proxy for consumer price index, all five tax components are measure in billions of naira. A positive relationship is expected between tax revenue variables and inflation rate.

### Technique for Data Analysis

The analysis is conducted using the autoregressive distributed lag (ARDL) bounds testing approach to co-integration developed by Pesaran, *et al.*, (2001). The testing procedure starts by estimating the short run and the long run simultaneously and the F-statisticis compared to the critical value tabulated by Pesaran, *et al*., (2001). Initially, this technique is performed going through the VAR route but with advancement in software technology the ARDL model may be estimated as follows:

$$\Delta INF_t = \alpha_0 + \sum_{i=1}^{K} \alpha 1i \Delta INF_{t-1} + \sum_{i-1}^{K} \alpha 2i \Delta InPPT_{t-1} + \sum_{i=1}^{K} \alpha 3i \Delta InVAT_{t-1} + \sum_{i=1}^{k} \alpha 4i \Delta InCIT_{t-1} +$$

$$\sum_{t-i}^{k} \alpha 5i \Delta InGIT_{t-1} + \sum_{t-i}^{k} \alpha 6i \Delta InSDT_{t-1} + \beta_1 INF_{t-1} + \beta_2 InPPT_{t-1} + \beta_3 InVAT_{t-1} +$$

$$\beta_4 InCIT_{t-1} + \beta_5 InGIS_{t-1} + \beta_6 InSDT_{t-1} + \mu_t \quad \text{.....(3)}$$

In equation 3, the part of the model with α may be considered as the short run while β denotes the long run model. The model uses F-statistics for the bound test which is obtained by imposing restrictions on the long-run estimated coefficients of one period lagged of the variables which should be equal to zero. Notably, the null hypothesis of no co-integration states that $H_0$: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = 0$ is tested against the alternative hypothesis $H_1$: $\beta_1 \neq B_2 \neq B_3 \neq B_4 \neq 0$ and so on. However, this applies when going through the VAR route using lower software such as Eview 7 and below.

Notably, bounds of critical values ranging from 1%, 2.5%, 5% and 10% were provided by Pesaran,*et al*., (2001) to guides decision for the lower and the upper bounds. In this study, 5% is taken as the chosen level of significance of the test. Hence, if the value of the F-statistic is less than the lower bound then the variables are I(0) and therefore not co-integrated by any standard. Contrariwise, if the F-statistic lies above the upper bound, long run co-integration exists. In the final analysis, the test will be inconclusive if the F-statistic lies in-between the lower and the upper bounds. Therefore, upon confirmation of long run relationship between the dependent and the regressors, the short run model is estimated using the restricted error correction term as follows.

$$\Delta INF_t = \alpha_0 + \sum_{i=1}^{K} \alpha 1i \Delta INF_{t-1} + \sum_{i-1}^{K} \alpha 2i \Delta InPPT_{t-1} + \sum_{i=1}^{K} \alpha 3i \Delta InVAT_{t-1} + \sum_{i=1}^{k} \alpha 4i \Delta InCIT_{t-1} +$$

$$\sum_{t-i}^{k} \alpha 6i \Delta InGIT_{t-1} + \sum_{t-i}^{k} \alpha 7i \Delta InSDT_{t-1} + \lambda ECT_t \quad \text{.....(4)}$$

The $ECT_{t-1}$is the error correction term obtained from the long-run estimation while λ is the coefficient that measures the speed of convergence arising from disequilibrium occasioned by a shock. Expectedly, the sign of the $ECT_{t-1}$must be significant and negative if there is existence of long-run equilibrium among the variables.

## 4. RESULTS AND DISCUSSION OF FINDINGS

**Table 1: Stationarity test results**

| ADF Test | | | | Phillips-Peron (PP) Test | | |
|---|---|---|---|---|---|---|
| Variable | Level | First Diff | Order | Level | First Diff | Order |
| INF | -3.21 | -5.47 | 1 | -3.21 | -5.47 | 1 |
| LPPT | -2.09 | -6.28 | 1 | -2.09 | -6.34 | 1 |
| LCIT | -1.23 | -6.03 | 1 | -0.98 | -9.09 | 1 |
| LVAT | -4.33 | - | 0 | -3.76 | - | 0 |
| LGIT | -4.11 | - | 0 | -3.83 | - | 0 |
| LSDT | -2.12 | -4.87 | 1 | -2.10 | -11.99 | 1 |
| C.V = 5% | -3.54 | -3.55 | | -3.54 | -3.54 | |

*Source: Extracted from Eview 12.0*

Table 1 consists of ADF and PP tests and the results were presented at level and first differencing to show the order of integration. Since the bound test requires variables at either

I(0) and I(1), there is no need to present order 1 differencing once stationarity has been achieved for a variable at level. Therefore, value added tax and gas income tax were stationary at level differencing while stationarity was achieved for the reminder of the variables at integration of order one. Accordingly, the ARDL model (4, 1, 3, 3, 3) was estimated and subjected to series of diagnostic tests with the p-value in parenthesis.

**Table 2: Diagnostic Tests**

| Diagnostic Tests | | Decision |
|---|---|---|
| Jarque-Bera (Normality) Test | 0.32(0.83) | Normally distributed |
| Serial Correlation LM test | 0.77(0.48) | No serial correlation |
| ARCH LM Test | 1.95(0.17) | No heteroscedasticity |
| Ramsey Reset Test | 20.63(0.11) | No misspecification |

*Source: Extracted from Eview 12*

Observably, the tests indicated that the model is satisfactory as it passes the diagnostic tests in that it is normally distributed, serially uncorrelated, no heteroscedasticity and has no misspecification bias. Likewise, the model is stable as revealed by the tests of CUSUM in Fig 1 and CUSUMSQ in Fig 2 where the blue line lies between the two critical bounds.

**Fig 1: Stability (CUSUM) Test**

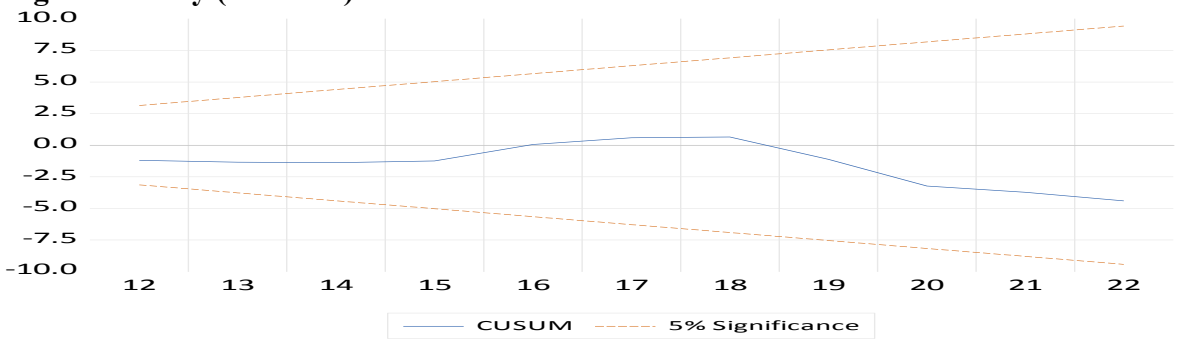
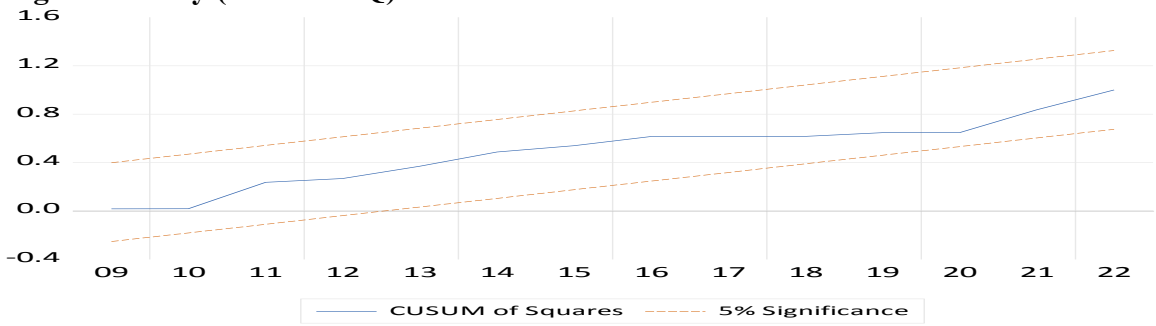



**Fig 2: Stability (CUSUMSQ) Test**




In what follows, the bound co-integration test is depicted in Table 3 where the F-Stat 4.04 is greater than the upper bound of 3.38. This further suggests the presence of a long run relationship existing between the selected variables in the tax revenue components and inflation rate.

**Table 3: ARDL Bound test for co-integration**

| F-Statistic | 5% Level | |
|---|---|---|
| K | I(0) | I(1) |
| 5 | 2.39 | 3.38 |
| F-statistic = 4.04 | | |

*Source: Extracted from Eview 12*

Table 4 contains the long run estimation of inflation rate model where the combined explanatory variables account for 92% variation in inflation rate in Nigeria for the period under consideration. Also, serial correlation does not seem to be a problem in the model as suggested by the DW statistic of 2.09 and corroborated by the battery of diagnostic tests. Likewise, the model revealed a statistical significant level for the F-statistic. Notably, it can be seen from the results that petroleum profit tax, gas income tax and company income tax had negative influence on inflation rate in Nigeria.

**Table 4: ARDL Long run model of Inflation Rate**
**Dependent Variable: INF**

| Variable | Coeff | std error | t-stat | Prob |
|---|---|---|---|---|
| Constant | -125.20 | 99.30 | -1.26 | 0.23 |
| LPPT(-1) | -8.97 | 12.01 | -0.75 | 0.47 |
| LCIT(-1) | -11.45 | 7.55 | -1.52 | 0.16 |
| LVAT(-1) | 38.40 | 23.56 | 1.63 | 0.13 |
| LGIT(-1) | -2.08 | 7.44 | -0.28 | 0.79 |
| LSDT(-1) | 4.05 | 11.07 | 0.37 | 0.72 |
| $R^2$ | | 0.92 | | |
| DW | | 2.09 | | |
| F-Stat | | 6.32 | | |

*Source: Extracted from Eview 12*

On the contrary, value added tax and stamp duty tax exhibited positive relationship with inflation. However, no statistical significant relationship could be established for any of the variables implying that neither the positive nor the negative relationship was felt by inflation rate in the period of analysis. In other words, no relationship between the tax revenue variables and inflation rate could be observed in the long run. Ezu (2016), Mirovic, *et al*., (2019) and Adegbite (2019), Onabote, *et al*., (2023) and Ajeigbe, *et al*., (2023) had earlier reached similar findings.

**Table 5: ARDL ECM**
**Dependent Variable: DINF**

| Variable | Coeff | Std error | t-stat | Prob |
|---|---|---|---|---|
| DLINF(-1) | 0.93 | 0.15 | 6.14 | 0.00 |
| DLPPT | -1.35 | 3.71 | -0.36 | 0.72 |
| DCIT | 28.15 | 6.53 | 4.31 | 0.00 |
| DVAT(-1) | -43.28 | 9.62 | -4.50 | 0.00 |
| DGIT(-2) | 5.89 | 2.46 | 2.39 | 0.04 |
| DLSDT | -6.29 | 2.49 | -2.53 | 0.03 |
| ECM(-1) | -1.06 | 0.16 | -6.61 | 0.00 |
| $R^2$ | | 0.88 | | |
| DW | | 2.09 | | |

*Source: Extracted from Eview 12*

Meanwhile, Table 5 presents the impact of tax revenue on inflation in the short run where the independent variables explained 88% variation in inflation rate during the review period. Likewise, the DW statistics falls within the acceptable range of no autocorrelation. Similarly, the positive constant suggests that in the absence of the selected tax variables inflation rate in Nigeria remains positive. Notably, the results revealed that apart from petroleum profit tax which is negative and statistically insignificant, gas income tax, stamp duty tax, company

income tax and value added tax had significant influence on inflation rate in the short run during the period under review. Therefore, the effect of value added tax and company income tax on inflation rate is positive which implies that a unit increase in company income tax increases inflation rate by 28.2% and a similar percentage increase in gas income tax led to an increase of 5.9% in the period of consideration. Similarly, a 1% increase in value added tax and stamp duty tax resulted in 43.28% and 6.29% decrease respectively in inflation rate in the short run. The findings gave credence to similar prior studies such as Olaoye (2016), Atsu, *et al*., (2017), Obaretin and Akhor (2019), Prati (2024) as well as Apinoko, *et al*., (2024).

## 5. CONCLUSION AND POLICY RECOMMENDATIONS

The study focuses on the relationship between inflation rate and tax revenue disaggregated into value added tax, petroleum profit tax, gas income tax, company income tax and stamp duty tax in Nigeria. The study employed ARDL while the data covered the period, 1986-2022. The study revealed mixed findings for the short and long run analyses. It must be emphasized that taxation constitutes an important revenue sources in fiscal policy of the government as it accounts for over 80% of government revenue. However, raising revenue through taxation is normally saddled with various challenges such as tax invasion and avoidance, the attitudes of tax payers to under-declare their taxes and high level corruption among tax officials. In many economies particularly the developed countries, the administration of tax policy is used to fight inflation through raising adequate revenue not necessarily by increasing taxes but rather through blocking all the loopholes and linkages used as conduit for siphoning money thereby ensuring that all revenue collected entered the coffers of government. The result is surplus or balanced budgeting and the tendency of government to resort to deficit financing, a major cause of inflation, will be curtailed. This is not the case in most developing economies like Nigeria.

Against this backdrop, the results from the long run mimic the short run findings. The only exception is that petroleum profit tax is insignificant in the short run while other variables are statistically significant. In the long run, none of the variables is statistically significant. Thus, tax revenue could not be used to check inflation in the long run. As such only VAT and stamp duty tax had deleterious effect on inflation while company income tax and gas income tax stimulate inflation in the period under review. The main conclusion therefore is that although, VAT and stamp duty tax had short run significant negative effect on inflation, prices of goods and services have been rising on a geometric progression thereby suggesting that these variables could not effectively check price inflation. The positive significant effect in the short run of gas income tax and company income tax may have contributed to actually fuel inflation in Nigeria.

Therefore, the study recommended that increases in the domestic price of petroleum product should not be encouraged while linkages through which oil revenue is siphoned should be blocked by appropriate authorities. Also, corporate income tax for SMEs should be kept low while a moderate increase for large businesses may be encouraged. Likewise**,** for certain category of products (e.g., such as pharmaceutical products), a reduction in VAT is advocated by the study while a moderate increase for luxury goods may be tolerated by government. Furthermore, government may consider moderate increase in gas income tax to prevent its adverse consequences on the economy. Finally, further increase in stamp duty should be halted as a way of checking further rise in prices most especially food inflation.

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