Global Scientific JOURNALS

GSJ: Volume 9, Issue 3, March 2021, Online: ISSN 2320-9186
www.globalscientificjournal.com

# FISCAL POLICY AND PRICE STABILITY IN NIGERIA: AN EMPIRICAL ANALYSIS

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## Abstract

The study investigated the impact of fiscal policy on price stability in Nigeria. Annual time series data were obtained from the Central Bank of Nigeria Statistical for the period 1981 to 2019 on the variables used for the study. Unit root test was conducted using Augmented Dickey-Fuller test and Phillips-Perron test techniques and the results showed that the variables were stationary though at different levels. Co-integration test was also conducted using Johansen co-integration test method and the result showed that the variables in the model are co-integrated meaning that the variables have a long run relationship. The error correction mechanism showed that the coefficient of multiple determination ($R^2$) in the overparameterized model was 0.770417 while it was 0.678828 in the parsimonious model. The short run regression result showed that external debt has a positive and insignificant impact on price stability in Nigeria. The short run result also showed that domestic debt has a positive and significant impact on price stability in Nigeria while recurrent expenditure has a positive and insignificant impact on price stability in Nigeria. The result also showed that capital expenditure has a positive and significant impact on CPI in Nigeria while non-oil revenue has a negative and significant impact on CPI in Nigeria. The result from long run dynamic analysis revealed that price stability in the one period lag has a positive and significant impact on the current CPI. The result showed that domestic debt has a positive and insignificant impact on CPI. The also revealed that recurrent expenditure has a positive and significant impact on CPI while capital expenditure has a positive and significant impact on CPI. The result also showed that non-oil revenue has a negative and significant impact on CPI. Based on these findings, it was recommended that government should minimize its borrowing activities, improve its taxing activities to reduce tax evasion and avoidance and also ensure that optimal prudence is observed in its spending.

Keywords: Price stability, Public debt, public expenditure, Economic growth.

## 1.1 Introduction:

The concept of fiscal policy refers to that part of government policy which is concerned with the raising of revenue through taxation and other means and deciding on the level and pattern of expenditure for the purpose of influencing economic activities. That is, it deals with taxation, other revenues, public borrowing and public expenditure aimed at influencing economic activities or the realization of certain desirable national goals (Chinweoke, 2014). According to Diulio (2004), Fiscal policy consists of a change in taxes, transfers and/or government spending to change output while Abel and Bernanke (2005) opined that fiscal policy concerns government spending and taxation. Jhinghan (2016) sees fiscal policy as the use of taxation and public expenditure by the government for stabilization or growth. Dimoji et al (2013) argued that the objectives/ roles of fiscal policy include in developing countries include: to increase the rate of investment, to encourage socially optimal investment, increase the level of investment, promote economic stability, prevent inflation and achieve price stability among others.

## 1.2 Statement of problem:

In Nigeria, different types of fiscal policies have been adopted and applied. Contractionary fiscal policy has at one time been adopted and at another time, expansionary fiscal policy has been adopted. There has been changes in government revenue as a result of changes in taxes and government borrowing. Again, government expenditures have been on the increase on the increase over the years. One of the major reasons for the changes in these fiscal policy variables is to stabilize prices. Unfortunately, irrespective of these variations in fiscal policy variables high rates of price instability have been experienced in Nigeria. Given the importance of price stability in an economy like elimination of cyclical fluctuations, stabilizing the value of money, reduction in inequalities of income and wealth, encouraging economic growth and promoting economic welfare, the study therefore investigated the impact of fiscal policy on price stability in Nigeria

## 1.3 Objectives of the study

The broad objective of the study was to investigate the impact of fiscal policy on price stability in Nigeria. The specific objectives of the study were:

(i) To investigate the impact of external debt on price stability in Nigeria.
(ii) To examine the impact of domestic debt on price stability in Nigeria.
(iii) To investigate the impact of recurrent expenditure on price stability in Nigeria
(iv) To investigate the impact of capital expenditure on price stability in Nigeria
(v) To investigate the impact of non-oil revenue on price stability in Nigeria.

## 1.4 Hypothesis of the study:

In order to guide the study, the following null hypotheses were formulated:

$HO_1$: External debt does not have any impact on price stability in Nigeria.
$HO_2$: Domestic debt does not have any impact on price stability in Nigeria.
$HO_3$: Recurrent expenditure does not have any impact on price stability in Nigeria.
$HO_4$: Capital expenditure does not have any impact on price stability in Nigeria.
$HO_5$: Non-oil revenue does not have any impact on price stability in Nigeria.

## 2.0 LITERATURE REVIEW

### 2.1 Theoretical literature

**2.1.1 Fiscal theory of price level:** Fiscal theory of the price level can be explained by the two approaches namely: the weak form fiscal theory of price level and the strong form fiscal theory of price level. Weak form fiscal theory of price level reflects the dominance of fiscal policy (fiscal dominance) explained by the existence of a link between fiscal policy and monetary policy through seigniorage. Because seigniorage (revenue from printing money) is one source of government revenue, the long-term monetary and fiscal policies are determined at the same time by the fiscal budget constraint. Weak form FTPL assumes that the fiscal authorities will move ahead with setting the primary budget surplus / deficit and then respond by creating seigniorage by monetary authorities to maintain the solvency of the Government. If the authorities refuse to create seignorage, the debt to GDP ratio can be increased in an unsustainable manner. This in turn will have an effect to increase real interest rates and government debt in line with increasing demand by the market premium. However, this process cannot continue. One of the policy authorities has to change. Weak form fiscal theory of price level assumes that the central bank will respond by creating seignorage to avoid default. Therefore, this theory also states that fiscal policy helps determine the future inflation through money growth. This theory simply states that the money supply is the main cause of the fiscal authority. In other words, fiscal policy is exogenous while the movement of money supply is endogenous. In contrast to the weak form fiscal theory of price level where money supply is endogenous to meet the government budget constraint, strong form fiscal theory of price level assumes both fiscal policy and monetary policy are exogenous and that prices adjust to ensure government solvency (Surjaningsih et al, 2012).

### 2.2 Conceptual literature

Anyanwu (1997) defined fiscal policy as that part of government policy concerning the raising of revenue through taxation and other means and deciding on the level and pattern of expenditure for the purpose of influencing economic activities or attaining some desirable macroeconomic goals. Ruffin and Gregory (1983) sees fiscal policy actions as changes in government expenditures or tax schedules for the purpose of achieving macroeconomic goals. According to Truett and Truett (!987), fiscal policy refers to government policies of taxing and spending designed to affect the equilibrium level of national income while Njoku (2009) opined that fiscal policy refers to government actions as they affect government revenue receipts and expenditures.

Fiscal policy is of two kinds: Discretionary fiscal policy and non-discretionary fiscal policy. Discretionary fiscal policy means the deliberate change in the government expenditure and taxes to influence the level of national output and prices while non-discretionary fiscal policy is a built-in tax or expenditure mechanism that automatically increases aggregate demand when recession occurs and reduces aggregate demand when there is inflation in the economy without any special deliberate actions on the part of the government (Ahuja, 2012). However, Okafor and Obasi (2011) opined that there are two types of fiscal policy. They are expansionary fiscal policy and contractionary fiscal policy. Expansionary fiscal policy refers to budgeting which is aimed at stimulating economic activities through injecting more money into the economy. This is pursued through reduction in taxes and increasing government spending through implementation of public programmes and repayment of internal debt while contractionary fiscal policy refers to surplus budgeting which is aimed at discouraging the pace of economic activities through reduction of money in circulation to curb inflationary pressure.

This is pursued through reduction in government spending, increasing taxation and internal borrowing by the government.

There are two main approaches to fiscal policy: countercyclical and compensatory approaches. Under the countercyclical approach, the government is assigned the role of varying its tax and expenditure polices with the objective of moderating fluctuations in income and employment over the business cycle. Here the government is required to unbalance its budget during deflationary and inflationary periods, that is, to increase its expenditure and cut taxes when private spending declines to depression levels, and raise taxes and cut its expenditure during the prosperity (or inflationary stage of the business cycle). On the other hand, proponents of a compensatory fiscal policy approach opine that given the future prospects of secular stagnation and/ or secular inflation, deficit financing and surplus financing become a long run imperative. Thus, if inflation is a continuing problem, long-run surplus financing will be necessary; on the other hand, if persistent deflationary tendencies develop, long run deficit financing will be required. The argument here is that government budget should be used as the major instrument for achievement of macroeconomic objectives and that budgetary changes should be made as often as desired and in whatever magnitude desired. Thus, here, the institutional aspects of taxation are subordinated to the compensatory interest since the purpose of taxation (according to its proponents) is never to raise money but to leave less in the hands of the taxpayer (Anyanwu, 1993).

Chinweoke (2014) opined that the objectives of fiscal policy include increasing the rate of investment, increasing employment opportunity, counteracting inflation, promoting economic stability and enhancing economic growth and development while Peter (2009) argued that that the objectives of fiscal policy include: economic growth and development, healthy balance of payments, removal of inequality in income distribution, protection of domestic industries, stabilization of the economy, increasing employment opportunities, stable exchange rates and increasing capital formation and investment. Jhingan (2016) was of the opinion that that the objectives of fiscal policy include: maintain and achieving full employment, stabilizing the price level, stabilizing the growth rate of the economy, maintain equilibrium in the balance of payments and promoting economic development of underdeveloped countries while according to Anyanwu (2003) the objectives of fiscal policy include: price stability, external equilibrium, economic development and growth and income distribution.

According to Anyanwu (1993) the limitations of fiscal policy include (a) problem of how to make accurate short run forcasts of the economic situation. (b) there is the problem of how to appraise the effective force of the numerous techniques of fiscal policy (c) there are political obstacles in the way of successful fiscal policy arising because the economy is shaped to allow full expression of dissent which may be antithetical to executive parliamentary decisions about debatable issues (d) there is also the problem of accurate data, which may become available only with a delay (e) the uncontrollable portions of the budget pose a problem in the use of fiscal policy (f) the use of fiscal policy is also limited by the time lag involved (g) it is also discriminatory in effect since it is non-neutral, not affecting the whole economy equally.

### 2.3 Empirical literature

Oseni, (2015) s examined the impact of fiscal policy on inflation volatility in Nigeria, using the framework of error correction mechanism. The results of the study show that discretionary fiscal policy has a transitory effect on inflation volatility in the short-run and a significant negative effect on inflation volatility in the long-run. The result also showed that oil price volatility and exchange rate volatility have negative and significant effects on inflation

volatility in the long-run while the fluctuations caused by the level of inflation to its volatility is minimal in the long-run compared to the short-run effect. The study concludes that discretionary fiscal policy has a long-run negative and significant effect on inflation volatility in Nigeria.

Olasunkanmi (2020) examined the impact of fiscal policy on inflation volatility in Nigeria between 1981 and 2013. The study employed unconditional inflation volatility on a quarterly basis based on the consumer price index basket (CPI) because it captures the extent of short-term fluctuations in inflation. The empirical results of the study showed that discretionary fiscal policy has no significant impact on inflation volatility in the short-run while in the long-run, fiscal policy has a noticeable significant influence on inflation volatility. The results also showed that inflation rate fluctuation has more influence on inflation volatility in the short-run than the long-run; a similar relationship was observed for changes in output. Money supply and government size have transitory effects on inflation volatility in the short-run while they have no effect in the long-run. Oil price volatility and exchange rate volatility have short-run transitory effects on inflation volatility and permanent long-run negative effects on inflation volatility. The study recommended that government should allow discretionary fiscal policy to automatically stabilize the economy in order to reduce the volatility in inflation

Otto and Ukpere (2015) investigated the Impact of Fiscal Policy on Inflation in Nigeria. The data for the study was collected from Central Bank of Nigeria statistical bulletin. The study adopted the ordinary least square method of estimation for data covering the period between 1980 and 2010. The data analysed showed that government revenue has a positive and insignificant impact on inflation while government expenditure has a negative and insignificant impact on inflation. the study concludes that fiscal policy impacts on inflation but the level of impact is insignificant. The study recommended the need for government to increase its capital spending.

Ezeabasili, et al (2012) examined the relationship between fiscal deficits and inflation in Nigeria for the period 1970 - 2006. modeling approach that incorporates cointegration techniques and structural analysis was incorporated the study. The results of the study revealed a positive but insignificant relationship between inflation and fiscal deficits in Nigeria. The study did not find any strong evidence linking past levels of fiscal deficits with inflation in Nigeria during the period rather the study reported a positive long run relationship between money supply and inflation in the Nigerian economy, suggesting that money supply is procyclical and tends to grow at a faster rate than inflation rate

Dockery, et al (2012) investigated the long-term relationship between fiscal deficits and inflation for Nigeria. The empirical results showed that there is a positive but insignificant relationship between fiscal deficits and inflation. The analysis of the data also indicated a tenuous link to previous levels of fiscal deficits with inflation and provide, moreover, evidence of a positive long-run relationship between money supply growth and inflation, suggesting therefore that money supply growth is procyclical and tends to grow at a faster rate than the rate of inflation. Finally, from the impulse response and variance decomposition analysis, the study finds that the length of inflation is an important determinant of the ability of the system to return to its long-run equilibrium following a shock.

Ekanayake (2012) investigated the validity of the hypothesis that suggests there is a link between fiscal deficits and inflation in developing countries and further explored this link in the absence of public sector wage expenditure. Sri Lanka, a developing country with a persistent fiscal deficit, a large public sector and increasing inflation, was chosen for the empirical study. An auto-regressive distributed lag (ARDL) model was employed in the analysis, using annual data from 1959 to 2008. The results of the study suggested that, in the long run, a one percentage point increase in the ratio of the fiscal deficit to narrow money is associated with about an 11-percentage point increase in inflation. This link become weaker in the absence of the public sector wage expenditure. The overall inference was that inflation is not only a monetary

phenomenon in Sri Lanka and public sector wage expenditure is a key factor in explaining the deficit-inflation relationship.

Oseni et al (2016) examined the direction of causality between fiscal policy and inflation volatility in Nigeria for the periods 1981 to 2014. The study employed quarterly time series data on fiscal deficit and consumer price index (measure of inflation rate) from 1981:1 to 2013:3 a from the central bank of Nigeria statistical bulletin 2014 while the volatility data was generated through GARCH (1,1) method and analyzed using the Pairwise Granger Causality Test. The results of the study showed that there is bi-directional causality between fiscal deficit ($F-statistic$ = 5.86 & 3.96; $P < 0.05$) and inflation volatility. The implication of the result was that volatility in inflation rate is traceable to the persistent nature of the excess government expenditure over revenue of the Nigerian economy and vice versa; this will inform the government, policy makers and individual the reasons for continuous fluctuation in the prices of goods and services in the country.

## 3.0 Methodology

Multiple regression analysis was used in the study. Time series data spanning from 1981 to 2019 was sourced from the Central Bank of Nigeria statistical bulletin. The data was analysed using E-views 9

### 3.1 Model specification

In order to investigate the impact of fiscal policy on price stability of Nigeria, the model for this study was specified thus;



CPI = f (EXTDT, DMSDT, REC, CAP NOR) …. (1)
Where:
CPI = Consumer Price Index
EXTDT = External debt
DMSDT = Domestic debt
REC = Recurrent expenditure
CAP = Capital expenditure
NOR = Non-oil revenue
The model in its econometric linear form can be written as:
$CPI = b_0 + b_1EXTDT + b_2DMSDT + b_3REC + b_4CAP + b_5NOR + U$ …… (2)
U = stochastic or random error term
bo = constant intercept
$b_1 – b_5$ = coefficients of associated variables
The model in the log linear form can be expressed as:
$LogCPI = b_0 + b_1LogEXTDT + b_2LogDMSDT + b_3LogREC + b_4LogCAP + b_5LogNOR + U$ .(3)
Where:
Log = natural logarithm
The theoretical expectations about the signs of the coefficients of the parameters are as follow:
$b_1>0$, $b_2>0$, $b_3>0$, $b_4>0$, $b_5<0$

The Augmented-Dickey Fuller (ADF) and Phillips-Perron unit root tests were employed to ensure data stationarity and avoid the problem of spurious regression since the data for the analysis is

time series. The Johansen test for co-integration was also employed to investigate whether there is existence of long run relationship among the variables in the model.

**Table 1.1 Result of Augmented Dickey-Fuller unit root test**

| Variables | ADF test statistic | 1% critical value | 5% critical value | 10% critical value | Order of integration |
|---|---|---|---|---|---|
| CPI | -5.822996 | -4.226815 | -3.536601 | -3.200320 | 1(1) |
| EXTDT | -4.279513 | -4.226815 | -3.536601 | -3.200320 | 1(1) |
| DMSDT | -4.279513 | -4.226815 | -3.536601 | -3.200320 | 1(1) |
| REC | -10.05405 | -4.226815 | -3.540328 | -3.202445 | 1(2) |
| CAP | -4.921280 | -4.226815 | -3.540328 | -3.202445 | 1(1) |
| NOR | -5.486556 | -4.226815 | -3.540328 | -3.202445 | 1(1) |

Source: Author's computation

**Table 1.2 Result of Phillips-Perron unit root test**

| Variables | ADF test statistic | 1% critical value | 5% critical value | 10% critical value | Order of integration |
|---|---|---|---|---|---|
| CPI | -5.820656 | -4.226815 | -3.536601 | -3.200320 | 1(1) |
| EXTDT | -2.807184 | -2.628961 | -1.950117 | -I.611339 | 1(1) |
| DMSDT | -4.279513 | -4.226815 | -3.536601 | -3.200320 | 1(1) |
| REC | -10.50766 | -4.234972 | -3.540328 | -3.20244 | 1(2) |
| CAP | -5.009387 | -4.226815 | -3.536601 | -3.200320 | 1(1) |
| NOR | -5.821144 | -4.226815 | -3.536601 | -3.200320 | 1(1) |

Source: Author's computation



The Augmented Dickey-Fuller unit root test result presented on table 1.1 and the Phillips-Perron unit root test result presented on table 1.2 showed that CPI, EXTDT, DMSDT, and NOR were all stationary after the first difference at 1%, 5% and 10%. The Augmented Dickey-Fuller and Phillips-Perron unit root test result also showed that REC was stationary after the second difference at 1%, 5% and 10%. This is because their various ADF test statistic and PP test statistic was greater than their various 1%, 5% and 10% critical values in absolute terms.

**Table 2: Johansen co-integration test result**

Sample (adjusted): 1983 2019
Included observations: 37 after adjustments
Trend assumption: Linear deterministic trend
Series: CPI EXTDT DMSDT REC CAP NOR
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

| Hypothesized No. of CE(s) | Eigenvalue | Trace Statistic | 0.05 Critical Value | Prob.** |
|---|---|---|---|---|
| None * | 0.865759 | 191.7924 | 95.75366 | 0.0000 |
| At most 1 * | 0.727607 | 117.4920 | 69.81889 | 0.0000 |
| At most 2 * | 0.526884 | 69.37313 | 47.85613 | 0.0002 |
| At most 3 * | 0.383697 | 41.68175 | 29.79707 | 0.0014 |
| At most 4 * | 0.324597 | 23.77314 | 15.49471 | 0.0023 |

| | | | | |
|---|---|---|---|---|
| At most 5 * | 0.221255 | 9.252657 | 3.841466 | 0.0024 |

Trace test indicates 6 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

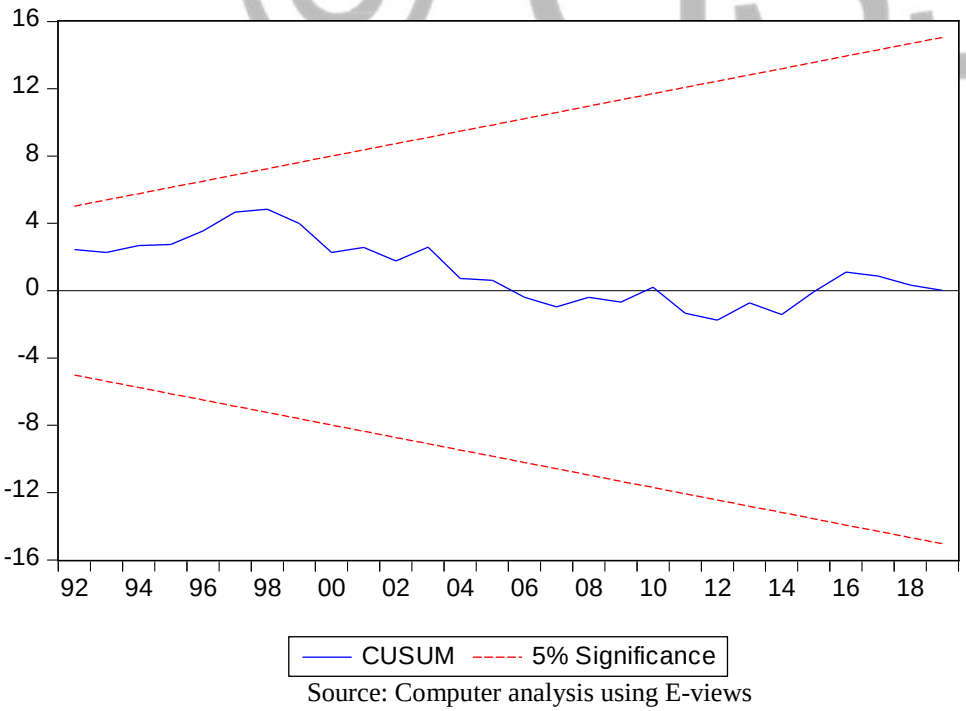
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

| Hypothesized No. of CE(s) | Eigenvalue | Max-Eigen Statistic | 0.05 Critical Value | Prob.** |
|---|---|---|---|---|
| None * | 0.865759 | 74.30038 | 40.07757 | 0.0000 |
| At most 1 * | 0.727607 | 48.11885 | 33.87687 | 0.0006 |
| At most 2 * | 0.526884 | 27.69138 | 27.58434 | 0.0484 |
| At most 3 | 0.383697 | 17.90862 | 21.13162 | 0.1333 |
| At most 4 * | 0.324597 | 14.52048 | 14.26460 | 0.0456 |
| At most 5 * | 0.221255 | 9.252657 | 3.841466 | 0.0024 |

Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values
SOURCE: Computer analysis using EViews 9

The trace test indicates that there are 6 co-integrating equations at 0.05 levels while Max-eigenvalue indicates that there are 3 co-integrating equations at 0.05 levels. All these results showed that the variables are cointegrated, that is, CPI has a long run relationship with EXTDT, DMSDT, REC, CAP and NOR.

**Table 3: Test for the stability of the model**




Source: Computer analysis using E-views

To investigate the existence of a possible structural instability, the study used the Cusum test on table 3 and found that the cumulative sum remained within the area between the two critical lines

showing that test did not detect any systematic eventual movements and that the coefficients values reflect structural stability.

**Table 4. Ordinary Least Square (OLS) Results: Short-Run Analysis**

Dependent Variable: LOG(CPI)
Sample: 1981 2019
Included observations: 39

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -1.817237 | 0.171583 | -10.59099 | 0.0000 |
| LOG(EXTDT) | 0.036478 | 0.026280 | 1.388043 | 0.1744 |
| LOG(DMSDT) | 0.557795 | 0.087429 | 6.379986 | 0.0000 |
| LOG(REC) | 0.333903 | 0.095681 | 3.489740 | 0.0014 |
| LOG(CAP) | 0.211541 | 0.069117 | 3.060602 | 0.0044 |
| LOG(NOR) | -0.314329 | 0.104574 | -3.005805 | 0.0050 |

| | | | |
|---|---|---|---|
| R-squared | 0.991925 | Mean dependent var | 3.289780 |
| Adjusted R-squared | 0.990701 | S.D. dependent var | 1.727868 |
| S.E. of regression | 0.166618 | Akaike info criterion | -0.605591 |
| Sum squared resid | 0.916129 | Schwarz criterion | -0.349658 |
| Log likelihood | 17.80902 | Hannan-Quinn criter. | -0.513764 |
| F-statistic | 810.7195 | Durbin-Watson stat | 1.317130 |
| Prob(F-statistic) | 0.000000 | | |

SOURCE: Computer analysis using EViews 9

From the results of the OLS, the constant parameter (Bo) is negative at 1.817237. This means that if all the explanatory variables are held constant, CPI as a dependent variable will on the average decrease by 1.82 percent. For EXTDT, the coefficient is 0.036478. This means that EXTDT is positively related to CPI and is in conformity to the aprori expectation. This implies that on the average, one percent increase in EXTDT will on the average lead 0.04 percent increase in CPI. The result also showed that the coefficient of DMSDT is positive and also in conformity to the aprori expectation. the coefficient of DMSDT which 0.557795 showed that on the average, one percent increase in DMSDT will lead to 0.56 percent increase in CPI. The result equally shows that the coefficient of REC is 0.333903 and is equally in conformity to the aprori expectation. From the result one percent increase in REC will on the average lead to 0.33 percent increase in CPI. The result also showed that the coefficient of CAP is 0.211541 and is also in conformity to the aprori expectation. From the result one percent increase in CAP will on the average lead to 0.21 percent increase in CPI. The result also showed that that the coefficient of NOR is -0. 314329.This is also in conformity to the aprori expectation. This implies that one percent increase in NOR will lead to 0.31 percent fall in CPI. The R-Squared value of 0.991925 shows that about 99 % of the total variation in the dependent variable (CPI) were explained by changes in the explanatory variables (EXTDT, DMSDT, REC, CAP and NOR). The F-statistic of 810.7195 with the corresponding probability value of 0.000000 measured the adequacy of the regression model and the overall influence of EXTDT, DMSDT, REC, CAP and NOR on CPI. Since P = 0.000000 < 0.05 (level of significance), the model was a good fit and the explanatory variables (EXTDT, DMSDT, REC, CAP and NOR) jointly exerted a statistically significant effect on the dependent variable (CPI). The Durbin-Watson value of 1.317130 showed the presence of positive autocorrelation.

The next step is to perform the over parameterised and parsimonious error correction method to account for short- run dynamic adjustments required for stable long run relationship among the variables in the model. The over parameterized model is presented in table 5. The over

parameterized model account for model misspecification problems as a step towards arriving at a preferred or parsimonious model. This is presented below

**Table 5. Over-Parameterised Error Correction Results**

Dependent Variable: DLOG(CPI)
Method: Least Squares
Sample (adjusted): 1984 2019
Included observations: 36 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -0.029842 | 0.051031 | -0.584781 | 0.5660 |
| DLOG(CPI(-1)) | 0.642949 | 0.230571 | 2.788502 | 0.0121 |
| DLOG(EXTDT) | 0.015073 | 0.042088 | 0.358134 | 0.7244 |
| DLOG(EXTDT(-1)) | -0.043564 | 0.045220 | -0.963366 | 0.3481 |
| DLOG(EXTDT(-2)) | 6.17E-05 | 0.043495 | 0.001418 | 0.9989 |
| DLOG(DMSDT) | 0.007556 | 0.168953 | 0.044723 | 0.9648 |
| DLOG(DMSDT(-1)) | -0.093014 | 0.132371 | -0.702676 | 0.4912 |
| DLOG(DMSDT(-2)) | 0.206378 | 0.134325 | 1.536405 | 0.1418 |
| DLOG(REC) | 0.063981 | 0.094194 | 0.679248 | 0.5056 |
| DLOG(REC(-1)) | 0.219642 | 0.126967 | 1.729921 | 0.1008 |
| DLOG(REC(-2)) | 0.128383 | 0.165919 | 0.773769 | 0.4491 |
| DLOG(CAP) | 0.153114 | 0.086938 | 1.761189 | 0.0952 |
| DLOG(CAP(-1)) | -0.023474 | 0.074516 | -0.315026 | 0.7564 |
| DLOG(CAP(-2)) | 0.115536 | 0.084711 | 1.363879 | 0.1894 |
| DLOG(NOR) | -0.310269 | 0.106291 | -2.919068 | 0.0092 |
| DLOG(NOR(-1)) | 0.017206 | 0.092805 | 0.185398 | 0.8550 |
| DLOG(NOR(-2)) | 0.021819 | 0.081011 | 0.269329 | 0.7907 |
| ECM(-1) | -0.577108 | 0.257124 | -2.244473 | 0.0376 |

| | | | |
|---|---|---|---|
| R-squared | 0.770417 | Mean dependent var | 0.147311 |
| Adjusted R-squared | 0.553589 | S.D. dependent var | 0.161742 |
| S.E. of regression | 0.108067 | Akaike info criterion | -1.305286 |
| Sum squared resid | 0.210211 | Schwarz criterion | -0.513526 |
| Log likelihood | 41.49514 | Hannan-Quinn criter. | -1.028940 |
| F-statistic | 3.553122 | Durbin-Watson stat | 1.735176 |
| Prob(F-statistic) | 0.005346 | | |

SOURCE: Computer analysis using EViews 9

In the over parameterized model as shown in table 5, the error correction term ECM (-1) is correctly specified. It is negative and statistically significant. This means that it will be effective to correct any deviations from the long-run equilibrium. Moreover, the negative and statistically significant of the ECM confirms that the variables in the model are co- integrated. The coefficient of the ECM(-1) which is -0.577108 indicates that the speed of adjustment to long run equilibrium is 57.71 percent when any past deviation must be corrected in the present period. This means that the present value of CPI adjusts so fast to changes in EXTDT, DMSDT, REC, CAP and NOR. The coefficient of determination ($R^2$) in the over parameterized model is 0.770417. This means that about 77 percent of the variations in the dependent variable (CPI) is explained jointly by changes in the explanatory variables in the model. The F-statistic of 3.553122 with probability of 0.005346 is significant. This means that the explanatory variables in the model (EXTDT, DMSDT, REC, CAP and NOR) were jointly significant. The Durbin Watson statistic of 1.735176 means the absence of autocorrelation. CPI in the one lag period is positive and statistically insignificant on current CPI. This means that CPI in the one lag period impacts positively and is statistically insignificant on current period CPI. EXTDT in the current

period and EXTDT in the two lag periods impact positively and were statistically insignificant on the current CPI. EXTDT in the one lag period has a negative impact and is also statistically insignificant on the current CPI. DMSDT in the current period and DMSDT in the two lag periods impact positively and were statistically insignificant on the current CPI. DMSDT in the one lag period has a negative impact and is also statistically insignificant on the current CPI. REC in the current period, one lag period and two lag periods impact positively and were statistically insignificant. CAP in the current period CAP in the two lag periods impact positively and were statistically insignificant on the current CPI. CAP in the one lag period has a negative impact and is also statistically insignificant on the current CPI. NOR in the current period impact negatively and was statistically significant on the current CPI while NOR in the one lag period and NOR in the two lag periods impact positively and were statistically insignificant on the current CPI.

The next step is to perform the parsimonious model which is a stepwise reduction of jointly insignificant variables in the over parameterized model until parsimony is achieved. In other word, the parsimonious model would be built by estimating the equations of only those variables found to be significant in the over-parameterized model. This is presented in table 6

**Table 6: Parsimonious Error Correction Result**

Dependent Variable: DLOG(CPI)
Method: Least Squares
Sample (adjusted): 1984 2019
Included observations: 36 after adjustments

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | 0.011332 | 0.035243 | 0.321541 | 0.7502 |
| DLOG(CPI(-1)) | 0.580950 | 0.141771 | 4.097808 | 0.0003 |
| DLOG(EXTDT(-1)) | -0.068378 | 0.029681 | -2.303734 | 0.0289 |
| DLOG(DMSDT(-2)) | 0.161203 | 0.086203 | 1.870036 | 0.0720 |
| DLOG(REC(-1)) | 0.234310 | 0.074020 | 3.165498 | 0.0037 |
| DLOG(CAP) | 0.145229 | 0.068448 | 2.121735 | 0.0428 |
| DLOG(NOR) | -0.186970 | 0.067584 | -2.766497 | 0.0099 |
| ECM(-1) | -0.544532 | 0.146862 | -3.707786 | 0.0009 |

| | | | |
|---|---|---|---|
| R-squared | 0.678828 | Mean dependent var | 0.147311 |
| Adjusted R-squared | 0.598535 | S.D. dependent var | 0.161742 |
| S.E. of regression | 0.102482 | Akaike info criterion | -1.525128 |
| Sum squared resid | 0.294072 | Schwarz criterion | -1.173235 |
| Log likelihood | 35.45230 | Hannan-Quinn criter. | -1.402308 |
| F-statistic | 8.454378 | Durbin-Watson stat | 1.816695 |
| Prob(F-statistic) | 0.000015 | | |

SOURCE: Computer analysis using EViews 9

In the parsimonious model as shown in table 6, the error correction term ECM (-1) is correctly specified. It is negative and statistically significant. This means that it will be effective to correct any deviations from the long-run equilibrium. The speed of adjustment which is the coefficient of ECM (-1) is -0.544532. This showed that about 54.45 percent of short run disequilibrium adjusts back to equilibrium in the long run. This indicated that present value of the dependent variable adjusts slower to changes in the independent variables than what is obtained in the over-parameterized model. The coefficient of determination ($R^2$) in the parsimonious model is 0.598535. This means that about 59.85 percent of the variations in the dependent variable (CPI) are explained jointly by changes in the explanatory variables in the model. The F- statistic of

8.454378 with probability of 0.000015 is highly significant. The Durbin Watson statistic of 1.816695 means the absence of autocorrelation. The result of the parsimonious model showed that the coefficients of CPI (-1) is 0.580950 and is statistically significant. This value of the coefficient showed that on the average, one percent increase in the one lag period of CPI will lead to 0.58 percent increase in the current CPI. The result also reveals that the coefficient of DMSDT (-1) is -0.068378 and is statistically significant. The value of the coefficient shows that on the average, one percent increase in the DMSDT in the current period will lead to 0.07 percent decrease in the current CPI. The result equally revealed that the coefficient of DMSDT (-2) is 0.161203 and is statistically insignificant. The value of the coefficient showed that one percent increase in the two lag periods of DMSDT will on the average lead to 0.16 percent increase in the current CPI. The result equally showed that the coefficient of REC (-1) is 0.234310 and is statistically significant. The value of the coefficient showed that one percent increase in the one lag period of REC will on the average lead to 0.23 percent increase in the current CPI. The result also showed that the coefficient of CAP is 0.145229 and is statistically significant. The value of the coefficient showed that one percent increase in the current period of CAP will on the average lead to 0.15 percent increase in the current CPI. The result equally revealed that the coefficient of NOR is -0.186970 and is statistically significant. The value of the coefficient showed that one percent increase in the current period of NOR will on the average lead to 0.19 percent decrease in the current CPI

**Table 7: Pairwise Granger Causality Test Result**

Pairwise Granger Causality Tests
Sample: 1981 2019
Lags: 2

| Null Hypothesis: | Obs | F-Statistic | Prob. |
|---|---|---|---|
| LOG(EXTDT) does not Granger Cause LOG(CPI) | 37 | 2.96466 | 0.0659 |
| LOG(CPI) does not Granger Cause LOG(EXTDT) | | 0.78415 | 0.4651 |
| LOG(DMSDT) does not Granger Cause LOG(CPI) | 37 | 3.21705 | 0.0533 |
| LOG(CPI) does not Granger Cause LOG(DMSDT) | | 6.06611 | 0.0058 |
| LOG(REC) does not Granger Cause LOG(CPI) | 37 | 10.1820 | 0.0004 |
| LOG(CPI) does not Granger Cause LOG(REC) | | 1.08083 | 0.3514 |
| LOG(CAP) does not Granger Cause LOG(CPI) | 37 | 0.20560 | 0.8152 |
| LOG(CPI) does not Granger Cause LOG(CAP) | | 5.23412 | 0.0108 |
| LOG(NOR) does not Granger Cause LOG(CPI) | 37 | 0.68297 | 0.5123 |
| LOG(CPI) does not Granger Cause LOG(NOR) | | 10.0371 | 0.0004 |

SOURCE: Computer analysis using EViews 9

To determine the direction of causality between the variables, causality test was performed on the variables as indicated in table 7. A causality test states that if the probability value of the estimate is higher than 5% (0.05) level of significance, we accept the null hypothesis, and vice versa. The result showed that external debt (EXTDT) does not granger cause consumer price index (CPI) while consumer price index (CPI) equally does not granger cause external debt (EXTDT) implying that there exists independence causality between EXTDT and CPI. The result also revealed that domestic debt (DMSDT) does not granger cause consumer price index (CPI) while consumer price index (CPI) granger cause domestics debt (DMSDT) showing that there is a unidirectional relationship between DMSDT and CPI. The result also showed that

recurrent expenditure (REC) granger causes consumer price index (CPI) while consumer price index (CPI) does not granger cause recurrent expenditure (REC) also showing that there is a unidirectional relationship between REC and CPI. The result also showed that capital expenditure (CAP) does not granger cause consumer price index (CPI) while consumer price index (CPI) granger causes capital expenditure (CAP) also showing that there is a unidirectional relationship between CAP and CPI. The result also equally showed that non-oil revenue (NOR) does not granger causes consumer price index (CPI) while consumer price index (CPI) granger cause non-oil revenue (NOR).

### 4.1 Summary:

The impact of fiscal policy on price stability in Nigeria for the period 1981 – 2019 has been examined in this study. The short run regression result showed that EXTDT has a positive impact on CPI and was also statistically insignificant. The result also revealed that DMSDT has a positive and significant impact on CPI while REC equally has a positive and significant impact on CPI. The result also showed that CAP has a positive and significant impact on CPI while NOR equally has a negative and insignificant impact on CPI. The result of the parsimonious model showed that CPI in the one lag period has a negative impact on the current CPI and is also statistically significant. The result also showed that EXTDT has a negative impact on the current CPI and is statistically significant while DMSDT in the two lag periods has a positive impact on the current CPI and is statistically insignificant. REC in the one lag period has a positive impact on the current CPI and is statistically significant. CAP in the current period has a positive impact on the current CPI and is statistically significant while NOR in the current period has a negative impact on the current CPI and is statistically significant. The joint effect of the explanatory variables on the dependent variable was statistically significant implying that these variables were considered important variables in explaining changes in price index in Nigeria within the period of study. The modeled and operationalized framework of analysis exhibited a very high explanatory power, thereby providing supporting evidence that the explanatory variables included in the model were relevant in explaining changes in consumer price index in Nigeria within the period of study. The result of the granger causality test showed that there exists independence causality between EXTDT and CPI, is a unidirectional relationship between DMSDT and CPI, unidirectional relationship between REC and CPI, unidirectional relationship between CAP and CPI and unidirectional relationship between NOR and CPI.

### 4.2 Conclusion:

Given that the joint effect of the explanatory variables on the dependent variable were statistically significant, the study concludes that the components of price stability considered in this study are important variables in explaining price stability in Nigeria within the period of study.

### 4.3 Recommendations

Based on the findings, the study recommends that government should minimize its borrowing activities, improve its taxing activities to reduce tax evasion and avoidance and also ensure that optimal prudence is observed in its spending.

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