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PERSISTENCE OF FISCAL DEFICITS IN NIGERIA: EXAMINING THE ISSUES

Abstract

Due to a huge financing gap in many developing nations, governments use budget deficit to facilitate growth and development. However, deficit financing deepens the economic woes of these economies, leaving them in a vicious cycle of deficits. In Nigeria, for instance, fiscal deficits cause country's bad performance and ranking both in global growth and development indicators. Thus, the use of fiscal deficit to enhance economic performance has proved to be futile and also has left bad economic consequences. Based on the econometric method of Autoregressive Distributed Lag, this study examines how selected macroeconomic indicators influence fiscal deficits in the budgetary policy of Nigeria. Historical data between 1981 and 2017 were used for the study. The study shows a significant positive effect of inflation, oil revenue, and lagged exchange rate on fiscal deficits. There is also evidence that external debt and current exchange rate decrease the level of fiscal deficits. However, the research did not prove robust evidence of fiscal deficit persistence. Government policy should target low level of inflation and exchange rate appreciation as well as the productive investment of oil revenues and economic diversification as the panacea for persistent use of fiscal deficits.

Keywords   public finance, government expenditure, fiscal operations, economic growth

JEL Classification   F43, H60, H61, H62

INTRODUCTION

The conventional use of fiscal deficit to promote rapid economic growth and development has continued to agitate the minds of scholars and economic managers across the globe. The practice entails the use of fiscal deficit by governments to finance economic and social activities. It is the result of an expansionary fiscal policy whereby the government spends more than it collects in revenue through borrowings from internal and external sources. Early advocates of fiscal deficits include Keynes (1936) and Musgrave (1959) who contend that the government can impact the economic performance through its fiscal operations. This position was reinforced by Kustepelli (2005) who argues that large government deficits correlate positively with economic performance. Government expenditure relative to national income (GDP) is the most common measure of government size (Hage, 2003). To proponents of the Keynesian school, increased government expenditures or reduced taxation stimulate demand, thereby raising the level of economic activity, creating more jobs, and increasing the national output.

At the same time, Smith (1776), Pigou (1912), and Phillips (1958) argue that fiscal deficits distort the economic performance. Gali, Lopez-Salido, and Vall'es (2006) and Phillips (1958) contend that the use of fiscal deficits to stimulate economic activities fuels inflationary pres-

sure with attendant adverse macroeconomic implications. According to the Central Bank of Nigeria (2002), liquidity surfeit associated with deficit financing creates undue demand pressure on prices with attendant negative implications for interest rate, exchange rate, and, ultimately, the cost of production. Stevan (2010) and Onoh (2007) argue that financing of fiscal deficits through the banking sector crowds out private sector participation in economic activities. Also, Eyiuche (2000) contends that though developing nations adopt deficit financing as a conventional method of promoting rapid economic development, it worsened performance in Nigeria due to inherent structural imbalance in the economy.

Given the critical role of deficit financing in economic performance, discussions on what compels its use have received great attention in financial-economic literature, and what is common among scholars is that fiscal deficits emanate from multiple sources. For instance, the propensity to engage deficit financing is often hinged on the increasing role of government in modern economies. Most developing nations are characterized by low capital formation arising from low income and high consumption propensity. Also, a low level of technological development and a low level of private sector investment in developing economies compel governments to increase the rate of investment. Owing to resource constraints, the deficit financing option is often engaged. In developing economies, it is quite common to see government dominance in the provision of socio-economic facilities in the areas of transportation (roads, airways, and waterways), education, health, water, power, etc. In these economies, deficit financing is used by governments as a deliberate strategy for rapid economic growth and development.

Following the emergence of fiscal deficits in Nigeria's fiscal operations in response to the funding needs of the 3rd National Development Plan (1975–1980), fiscal deficits have become a recurring irritant in the nation's budgetary operations. The collapse of the international oil price in the late 1970s and early 1980s led to a severe decline in Nigeria's foreign exchange earnings and subsequent resort to massive external borrowings by the government to support its fiscal operations (Okoye, Evbuomwan, Ezeji, & Erin, 2018). Throughout this study (1981–2017), deficit financing was an integral part of the budgetary process in Nigeria except in 1995 and 1996 (CBN, 2017). However, the Nigerian situation presents a paradox of sorts because against the conventional assumption that fiscal deficit financing catalyzes the process of economic growth and development, there is glaring evidence of weak economic fundamentals, massive infrastructural deficiency, and security challenges in the country. Studies by Stevan (2010), Ezeabasili, Tsegba, and Ezi-Herbert (2012), Ishaq and Moshin (2015), Okoye, Omankhanlen, Okorie, Ahmed, and Okoh (2019), among numerous others, highlight the economic implications of deficit financing. However, the paucity of empirical evidence on what compels the use of deficit financing, particularly in developing economies, presents a compelling need to explore this area of study.

It is against this background that the study seeks to investigate the determinants of deficit financing in Nigeria. Due to the incomplete dataset on institutional and political factors, the study focused on economic factors. To achieve the objective of the research, the relationship between fiscal deficit (dependent variable) and key indicators of economic performance like exchange rate, inflation rate, external debt, oil revenue, and GDP growth rate (independent variables) was investigated. Historical data between 1981 and 2017 were analysed based on the method of Autoregressive Distributed Lag (ARDL).

1. LITERATURE REVIEW

Keynesian economists argue that budget deficits enhance economic growth by transferring liquidity or purchasing power to economic agents. However, the Keynesian argument has been criticized on the ground that deficits hurt the economy because they lead to higher interest rates, inflationary pressure, and, thereby, lower investment and, ultimately, growth. Critics of budget deficits, which according to Mitchell (2005), are referred to as deficit hawks, further posit that deficits should not be a major fiscal policy instrument, but when inevitable, they should be financed by taxes instead of borrowing. Opposition to the option of borrowing is based on the argument that

debt-financed deficits impair the capacity of future generations to attain fiscal balance with attendant negative implications for their economic and social well-being (Persson & Tabellini, 1994; Alesina & Perotti, 1996). This implies that deficit financing could be self-perpetuating and may ultimately lead to a vicious cycle. Arif and Hussain (2018) and Pontoh (2017) further explain that unstable fiscal deficits have negative social welfare implications.

Evidence from economic literature indicates that institutional factors influence the use of fiscal deficits. For instance, Ahmed and Alamder (2018) and Kibet (2013) assert that corruption reduces revenue and increases expenditure, thereby lowering net earnings. By implication, corruption reduces the capacity to fund budgets and impairs government ability to deliver on its mandate to citizens without resort to deficit financing. Also, since governments engage the option of deficit financing during the periods of declining earnings, it follows that revenue plays a critical role in budget financing decisions. For instance, Aliyu (2009) opines that massive inflow of oil revenue prompts a high level of government spending, while the reverse is associated with budget deficits.

Over time, scholars have examined the factors that affect fiscal deficits in developing and developed economies. The diversity of results from these studies suggests that determinants of fiscal deficits differ across countries. The work of Javid, U. Arif, and A. Arif (2012) estimated the economic, political, and institutional causes of fiscal deficits for South Asia and ASEAN countries over the period from 1984 to 2010. The study covered Pakistan, Bangladesh, India, and Sri Lanka (for South Asia) and Thailand, China, and the Philippines (for ASEAN countries). Sample selection was based on evidence of persistent, large and unstable budget deficits. Data analysis was based on a dynamic panel model and generalized method of moments (GMM) of Blundell and Bond (1998). The result provides support for the significant positive impact of income, inflation and budget size (relative to GDP) on budget deficit volatility, which implies that higher values of these variables correlate with increased instability of budget deficits. It also shows negative impact of population growth on volatility of fiscal deficits. Further evidence

from the study indicates strong positive impact of lagged fiscal deficits on budget deficit volatility, an indication of persistent effect of budget deficit volatility. High level of corruption, weak institutions and conflicts were also observed to cause budget deficit volatility in the study sample, while sound democratic governance led to lower deficits in fiscal performance.

Ekeocha and Ikenna-Ononugbo (2017) used the data on state government fiscal operations to study the effect of cost of governance on fiscal deficits for the period 2008–2015. Model estimation was based on the dynamic panel of Arellano and Bond (1991) GMM estimators in the Keynesian framework. The study shows cost of governance, inflation, population, and economic growth as major determinants of fiscal deficits across the states in Nigeria. Since democratic governance, based on presidential system, as practiced in Nigeria, has often been criticized as the most expensive democracy, this result suggests that cost of governance may be a factor in the use of deficit financing in Nigeria.

The work of Eyiuche (2000) investigated the nexus between selected economic indicators and fiscal deficits in Nigeria based on the data obtained between 1980 and 1994. The selected explanatory variables are interest and exchange rates, inflation rate, domestic savings, balance of payment, domestic debt, unemployment and gross domestic product. The study presents evidence of significant negative effect of balance of payment on fiscal deficits. This indicates that adverse balance of payment, which characterized the study period, significantly explains the prevalence of budget deficits in the country. It also shows strong positive effect of interest rate and domestic debt on fiscal deficits. There is also evidence of negative effect of exchange rate on fiscal deficits over the study period.

In a related study, Okoye, Evbuomwan, Modebe, and Ezeji (2016) examined the extent to which major economic fundamentals like exchange and inflation rates, unemployment level and gross fixed capital formation explain fiscal deficits in Nigeria over the period 1981–2013. The estimation technique of vector error correction mechanism (VECM) was used for the study. The result shows that high rate of unemployment lowers fiscal defi-

cits. This implies that policies that target employment generation through higher levels of productive investment raise fiscal deficits. The study further shows that high expenditure on infrastructural development (proxied as gross fixed capital formation) raises the level of deficits in Nigeria. Concerning inflation, the result indicates strong negative impact on fiscal deficits.

Torayeh (2015) analyzed budgetary performance in Egypt over the period 1985–2013 to determine whether recurring deficits in fiscal operations are better explained by macroeconomic performance or political and institutional factors. Evidence from the study shows that high-interest expenses, huge public sector wage bill and subsidy payments arising from weak political and institutional systems significantly explain fiscal deficits in Egypt's budgetary operations. The work of Safdar and Padda (2017) also established that economic and institutional factors strongly affect fiscal operations in Pakistan. Concerning economic factors, the study shows that high rate of inflation and trade liberalization or openness raise the level of deficits in Pakistan's budgetary operations. On the other hand, it produced evidence that high incidence of corruption, weak institutions and breakdown of law and order increase the budget deficit.

The research conducted by Hossain (1987) used quarterly data from 1974(Q2) to 1983(Q2) to estimate the impact of inflation on fiscal deficits in Bangladesh. Evidence from the study shows the increase in fiscal deficits during the periods of rising inflation. Bleaney and Francisco (2016) also report high and persistent inflation rates vis-à-vis large fiscal deficits in Sub-Saharan African countries. Using the fully modified ordinary least squares method, Okoye, Omankhanlen, Okorie, Ahmed, and Okoh (2019) observe that fiscal deficit is positively affected by exchange rate and inflation but negatively affected by external debt and money supply in Nigeria. The study was based on time series data between 1981 and 2016.

Roubini and Sachs (1989) examined the role of economic and political factors in the large fiscal deficits among OECD countries. The result indicates that low growth rate and high level of unemployment account for increase in fiscal deficits. It further shows negative impact of tenure of government on fiscal deficits as well as positive impact of number of political parties in a ruling coalition on fiscal deficits. In another study, Roubini (1991) identified political instability as a major determinant of fiscal deficits in developing countries, a reflection of huge expenditure on security and maintenance of law and order.

The work of Umoh, Onye, and Atan (2018) examined political and economic determinants of fiscal policy persistence in West Africa. They estimated fiscal persistence as the extent to which government's present fiscal (income and expenditure) behavior relates to its past behavior. Evidence from the study shows government expenditure, corruption, government effectiveness and rule of law as significant determinants of fiscal persistence in 14 West African countries. The impact of political factors on fiscal deficits was also examined in Anwar and Ahmad (2012) for Pakistan. The authors find strong positive impact of government size on budget deficits, which suggests that large government size leads to large fiscal deficits. Also, there is evidence that weak democratic institutions and low output level drive fiscal deficits.

Murwirapachena, Maredza, and Choda (2013) investigated the economic causes of persistent massive budget deficits in South Africa over the 1980–2010 period using the VECM estimation method. The result indicates strong negative effect of unemployment, foreign reserve and government investment on fiscal deficits. It also shows significant positive effect of GDP and foreign debt on fiscal deficits.

Ammama and Khan (2011) conducted a study to determine the direction of causality between fiscal deficits and inflation in Pakistan. The study covered the period 1960–2010. The result indicates that both variables cause changes in each other (bi-directional causality). The work of Ozurumba (2012) established causal impact of fiscal deficits on inflation for Nigeria but not the other way.

Shahateet, Habashneh, Makali, and Al-Majali (2014) analyzed the causal relationship between budget deficit and external debt in Jordan. The result of the study did not show any identifiable link (no causality) between fiscal deficits and external borrowings in Jordan. The nexus between

external debt and budget deficit was also evaluated in Cukurcayir (2016). Though there was no evidence that external debt compels the use of deficit financing, the study showed ineffective tax system and low public sector revenue as major determinants of budget deficits in Turkey and Spain.

In the work of Apergis and Danuletiu (2013) which investigated the relationship between public deficit, public debt, corruption and economic freedom in Romania, bi-directional causality was established between corruption and fiscal deficits which implies that dynamics in any of the variables affects the behavior of the other.

Arif and Hussain (2018) studied the economic and political determinants of budget deficit volatility in South Asia and selected ASEAN countries (Indonesia, Thailand, Pakistan, and India) between 1984 and 2016 using time series and panel data models. The study shows that corruption and trade openness promote budget deficit volatility. It also shows negative effect of population growth and political instability on the volatility of budget deficit. The finding of this study indicates that the corrupt and politically unstable nations are likely to encounter increased budget deficit volatility.

In a study of 21 OECD countries, Jajkovicz and Drobiszova (2015) used pooled data between 1998 and 2011 to examine the nexus between corruption and government expenditure. The result shows strong positive effect of corruption on defense and general expenditures, a further indication that corrupt nations often have to contend with deficits in their fiscal operations.

Using the data for 123 emerging economies, Barisik and Baris (2017) examined the link between quality of governance and budget deficit. Evidence presented in the study indicates that improvements in political stability and regulatory quality reduce deficit budgets while increase in voice and accountability index promotes it. The study, however, did not establish significant effect of corruption on budget deficit.

An anonymous study retrieved from an online web page (URL: http://qjfep.ir/article-1-394-en.html) analyzed the nexus between corruption and budget deficit using the fixed effect model and

generalized method of moments (GMM) based on the data collected from selected countries over the period from 2002 to 2013. Evidence from the study reveals strong positive effect of corruption on fiscal deficits. Ahmed and Alamder (2018) and Kibet (2013) assert that corruption reduces revenue and increases expenditure, thereby lowering net earnings. This reduces capacity to fund budgets and impairs government ability to deliver on its mandate to citizens without resort to deficit financing.

The work of Hamilton (1983) was designed to ascertain the nexus between the trend in the international oil market and macroeconomic performance of the post-World War II American economy. The result shows a negative correlation between the price of oil and macroeconomic performance. The finding that oil price increase reduced output in post-World War II America suggests that for net consumers (importers) of petroleum products, cost increases associated with high oil price impair production capacity in home industries. This suggests a reduction in national income and hence recourse to deficits.

The study of Rahma et al. (2016) examined how oil price shocks affect government budget in Sudan based on quarterly data for the period 2001(Q1)–2011(Q2). Evidence from the Granger causality test shows that decline in oil price causes changes in budget deficit, total revenue and current revenue. Akin and Babajide (2011) analyzed the impact of oil price shocks on selected macroeconomic variables in Nigeria. They report non-significant impact of oil price movements on government expenditure. However, a related study by Oriakhi and Iyoha (2013) presents empirical support for strong positive impact of oil price volatility on real government expenditure in Nigeria.

The work of Ftiti et al. (2016) examined the link between the price of crude oil and the economic performance of a selected sample of the Organization of Petroleum Exporting Countries (OPEC). The study was based on data from September 3, 2000 to December 3, 2010 gathered from United Arab Emirates, Kuwait, Saudi Arabia and Venezuela. The result shows that the increase in oil price reduces energy demand and thereby lowers aggregate productivity. This result suggests that high oil

price prompts resort to budget deficits since low level of productivity is associated with low national income.

The above review shows that fiscal deficit is affected by economic and non-economic factors. Economic determinants of fiscal deficits, highlighted by the review, include national income, government expenditure, inflation rate, balance of payment, interest rate, public debt, unemployment, infrastructure, government wage bill, subsidy payments, and trade openness. Non-economic factors include corruption, institutional factors, security challenges, political and governance systems as well as country demographics. The review also reveals that despite of persistent deficit financing of fiscal operations in Nigeria, very few studies have been conducted to ascertain the factors that sustain the practice. This research contributes to the body of literature in this area of knowledge.

2. SCOPE AND METHODOLOGY

Though literature shows economic, institutional and political factors as major causes of fiscal deficit in global economies, this study focused on economic factors that affect deficit financing of fiscal operations in Nigeria due to lack of consistent data on institutional and political factors over the study period. The study covers the period 1981–2017 with data sourced from the Central Bank of Nigeria statistical bulletin. Fiscal deficits became a recurring phenomenon in Nigeria's fiscal operations from 1981, hence its adoption as the base period for the study. Being of a time series nature, data on the variables were tested for stationarity using the method of Augmented Dickey-Fuller (ADF). Impact assessment of the independent variables on fiscal deficit was based on the method of Autoregressive Distributed Lag (ARDL) since the model has a mix of I(0) and I(1) order of integration. The *F*-bound test was used to determine co-integrating properties of the model while diagnostic tests were conducted to check for normality, serial correlation, heteroskedasticity, specification error and structural stability of the model.

2.1. Model estimation

The model employed in this study assumes a linear relationship between the dependent and independent variables. It estimates the nature and magnitude of impact of the independent variables (external debt, exchange rate, inflation rate, oil revenue, and GDP growth rate) on the dependent variable (fiscal deficit). Implicitly the model is stated as follows:

$$FD = f\left(EXD, EXR, INF, OREV, GDPR\right), \quad (1)$$

where FD – fiscal deficit (total budget deficit/ GDP), EXD – external debt (total external debt/ GDP), EXR – exchange rate, INF – inflation rate, $OREV$ – oil revenue, $GDPR$ – GDP growth rate (rate of output increase over successive periods).

The explicit form of the model is presented as follows:

$$FD = \beta_0 + \beta_1 EXD + \beta_2 EXR + \beta_3 INF + \\ + \beta_4 OREV + \beta_5 GDPR + \varepsilon_{it}, \quad (2)$$

where β_0 – intercept, $\beta_1 ... \beta_5$ – parameters to be estimated, ε_{it} – error term (to capture explanatory variables not captured in the model).

3. RESULTS AND DISCUSSION

The result of Augmented Dickey-Fuller (ADF), the Autoregressive Distributed Lag (ARDL) and the diagnostic tests are presented and discussed in this section.

3.1. Unit root test

The Augmented Dickey-Fuller (ADF) test was applied to ascertain the stationarity level for each of the individual variables as shown in Table 1. Analysis of the results shows that three of the variables (GDP growth rate, inflation rate and oil revenue) were found to be stationary at their levels while the remaining three (fiscal deficit, external debt and exchange rate) were non-stationary at level but became stationary at their first difference. This implies the combination of both level and first deference variables in the co-integrating equation. Since the variables are of I(0) and I(1) or-

Table 1. Unit root test

Variables	ADF @ levels	5% critical value	ADF @ 1st difference	5% critical value
FD	−3.269902*	−2.945842	−7.246427	−2.948404
EXD	−1.449389	−2.945842	−4.455978**	−2.948404
EXR	2.271091	−1.951678	−2.125842**	−1.951687
GDPR	−3.064113*	−2.951125	−7.531193	−2.957110
INF	−2.983983*	−2.945842	−6.046061	−2.948404
OREV	−3.491749*	−2.971853	−2.419075	−2.976263

Note: * stationary @ level, ** stationary @ 1st difference.

der of integration, the auto-regressive distributed lag (ARDL) model was employed in the estimation process as shown in Table 2. The ARDL model captures the dynamic process in the system and controls for possible incidence of multicollinearity in the estimated model.

3.2. Co-integration test

The bound test co-integration approach was employed to determine the whether there exists a long-run co-integrating relation between fiscal deficit and the exogenous variables in the model. The estimated F-statistic is benchmarked against the lower and upper bounds of the Pesaran critical value at 5 percent. An F-statistic value below the lower bound critical value reveals a non-significant result suggesting no evidence of co-integration while F-value between the lower and upper bound is an indication of indeterminate state. Evidence of co-integration is established if the estimated F-value is greater than the lower and upper bound critical values. The result in Table 2 shows strong co-integrating relationship even at 1 percent (F-statistic (4.545) > Pesaran critical values (3.06 and 4.15), p-value = 0.01). This indicates that the variables (fiscal deficit, external debt, exchange rate, GDP growth rate, oil revenue and inflation rate) tend to stick together over the long run.

Table 2. Bound test result

F-bounds test		Null hypothesis: no levels relationship		
Test statistic	Value	Significance level	I(0)	I(1)
F-statistic	4.545189	10%	2.08	3
		5%	2.39	3.38
K	5	2.5%	2.7	3.73
		1%	3.06	4.15

3.3. ARDL regression results

The long-run effect of the individual exogenous variables and their statistical relevance in explaining fiscal deficit is presented in Table 3. Analysis of the long-run parameters shows non-significant positive effect of past fiscal deficit on current year's deficit. The positive effect of lagged fiscal deficit on current year's deficit aligns with the finding in Javid et al. (2012) for South Asia and ASEAN countries. However, our result shows evidence of weak fiscal deficit persistence for Nigeria. External debt shows strong negative effect on fiscal deficit. The result indicates that a percentage increase in external debt reduces fiscal deficit by 0.056 per cent. This result is consistent with outcome of Okoye et al. (2019) but contradicts the positive result in Murwirapachena et al. (2013) and the non-significant effect reported in Cukurcayir (2016). The result further shows that movements in exchange rate strongly affect fiscal deficit. However, while current changes in exchange rate raises the level of deficits, lagged exchange rate shows a reducing effect. This finding counters evidence strong negative effect of exchange rate on fiscal deficit documented in Eyiuche (2000) but affirms the result in Okoye et al. (2019). Though the result reveals negative effect of output growth rate on fiscal deficit, the impact is not significant. The negative result lends support to outcome of Roubini and Sachs (1989) and Anwar and Ahmad (2012) but contradicts the finding in Murwirapachena et al. (2013) and Javid et al. (2012). Further evidence from the study indicates significant positive effect of inflation on fiscal deficit, an indication that high inflation rates are associated with high levels of fiscal deficits. Evidence from previous works reviewed in this study substantially agreed with this finding. For instance, Javid et al. (2012), Ekeocha and Ikenna-Ononugbo (2017), Safda and Padda (2017),

Hussain (1987) and Bleaney and Francisco (2016) present empirical support for strong strong positive effect of inflation on fiscal deficit. The result also shows significant negative effect of oil revenue on fiscal deficits. This result is quite germane for countries that are overly dependent on oil revenue for their operations. It implies that an increase in oil revenue lowers deficit financing and vice versa. It aligns with the result in Rahma et al. (2016). However, it contradicts Oriakhi and Iyoha (2013) who suggest a positive link between oil price volatility and deficit financing of its associated high government expenditure and Hamilton (1983) and Ftiti, Guesmi, Teulon, and Chouachi (2016) which show that high oil price lowers national income and thereby raises fiscal deficit.

With regard to the explanatory power of the model, the result indicates that about 60 percent of variations in fiscal deficit are jointly explained by the exogenous variables. The overall statistical significance of the model (F-statistic = 5.317, p-value < 0.01) attests to the validation of the estimated fiscal deficit model while the Durbin-Watson (DW = 1.80) statistic confirms the absence of serial autocorrelation in the model.

Table 3. Long-run results

Source: Authors' computation with EViews (2018).

Variable	Coefficient	Std. error	t-statistic	Prob.*
FD (–1)	0.046973	0.198199	0.236998	0.8146
*EXD**	–0.055578	0.018822	–2.952830	0.0068
*EXR***	–0.044876	0.020911	–2.146049	0.0418
EXR (–1)**	0.071786	0.028303	2.536321	0.0178
GDPR	–0.078087	0.076615	–1.019210	0.3179
*INF***	0.044862	0.019409	2.311424	0.0293
*OREV****	–0.000292	0.000156	–1.867632	0.0736
C	–2.642369	1.115722	–2.368304	0.0259
R-squared	0.598190			
Adjusted *R*-squared	0.485683			
F-statistic	5.316927			
Prob (*F*-statistic)	0.000810	Durbin-Watson stat		1.792893

Note: *, **, *** 1%, 5%, 10% significance level.

3.4. Short-run regression estimates

The short-run parsimonious result further reinforced the long-run estimate of exchange rate dynamics as a significant determinant of fiscal deficit. The result is highly significant (1 percent)

which indicates that exchange rate plays an important role in deficit financing of fiscal operations in Nigeria. The model shows a very high speed of adjustment, over 95 percent, which implies that almost all errors are corrected in the current period. The goodness of fit test shown by the *R*-squared result indicates that about 56 percent of short-run variations in fiscal deficit are accounted for by exchange rate. The Durbin-Watson statistic (1.79) suggests no incidence of autocorrelation.

Table 4. Short-run estimates

Source: Authors' computation with EViews (2018).

Variable	Coefficient	Std. error	t-statistic	Prob.
D(EXR)	–0.044876	0.014497	–3.095659	0.0048
CointEq (–1)*	–0.953027	0.151729	–6.281102	0.0000
R-squared	0.558568			
Adjusted *R*-squared	0.544328			
Durbin-Watson stat	1.792893			

3.5. Diagnostic tests

Test of the residual series normal distribution conducted shows Jarque-Bera statistic (0.065921, p-value = 0.967577), indicating that the null hypothesis of normally distributed series was confirmed in the study.

Table 5. Diagnostic tests

Source: Authors' computation with EViews (2018).

Test	F-statistic	P-value	Chi(X^2)/ T-statistic	P-value
Breusch-Godfrey serial correlation LM test	1.042411	0.3687	2.742659	0.2538
Heteroskedasticity test: Breusch-Pagan-Godfrey	1.227164	0.3252	8.439226	0.2955
Jarque-Bera	–	–	0.065921	0.9676
Ramsey-RESET test	0.653611	0.4268	0.808462	0.4268

Further test of serial correlation was conducted with Breusch-Godfrey LM test as presented in Table 5. Evidence from the test shows the absence of serial correlation between the model estimates and the error terms. Ramsey regression equation specification error test (RESET) tests the model for the existence of significant non-linear relationships in a linear test (functional misspecification). The result confirms the null hypothesis of non-significant specifi-
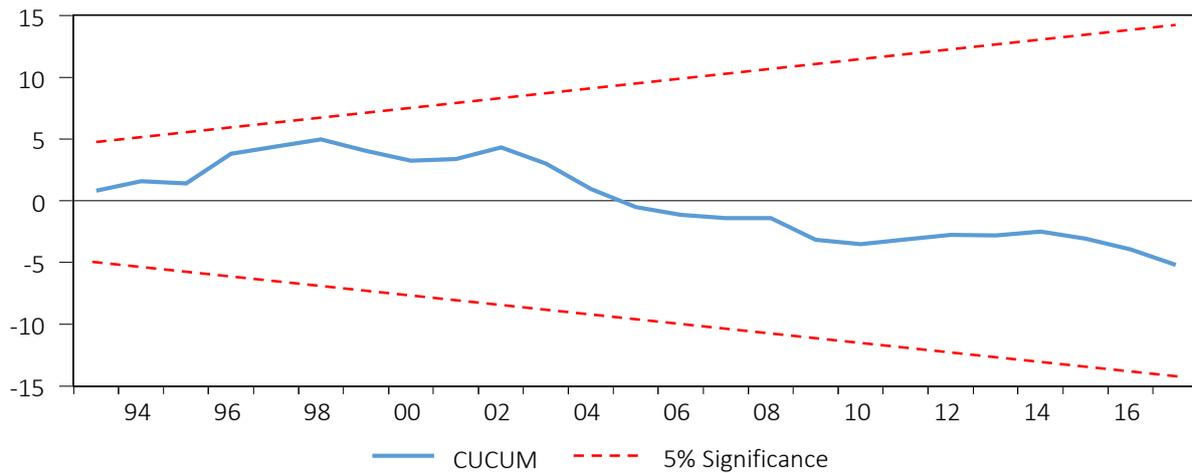
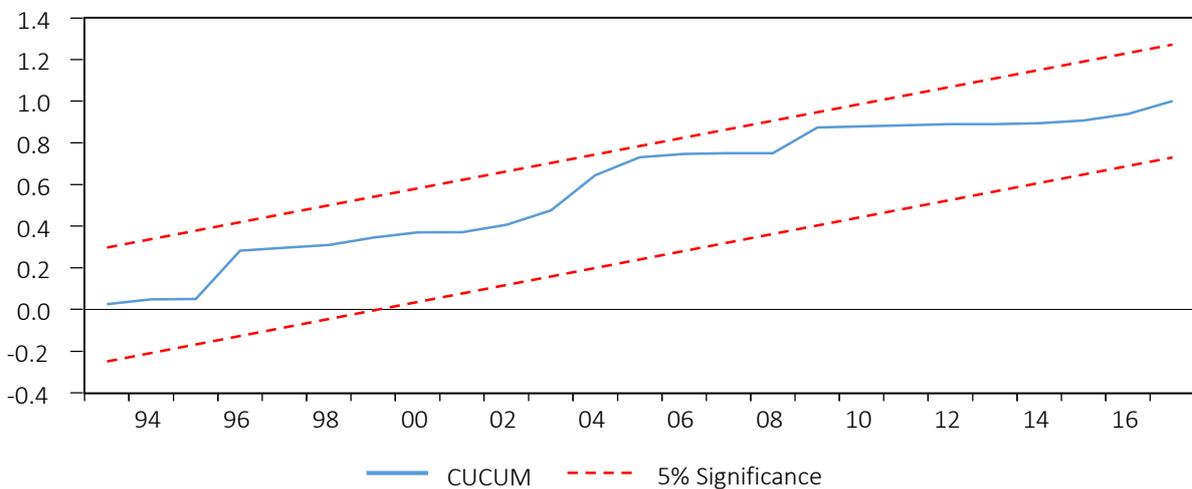**Figure 1.** Cumulative sum of residual test

Figure 2. Cumulative sum of squares residual test

cation error. The Harvey heteroscedasticity result indicates that the residual series exhibits the constant variance properties, which further suggest the homoscedasticity nature of the error variance. The structural stability of the model was tested with the cumulative sum of the residual series and the cumulative sum of squares. Evidence, as shown in Figure 1 and Figure 2, indicates that the estimated model is structurally stable, given that the regression lines lie within the lower and upper boundaries represented with the red-dotted lines.

CONCLUSION

This study provides empirical evidence on the nexus between fiscal deficits and key economic indicators in Nigeria based on data from the Central Bank of Nigeria. The study covers the period of 1981–2017; the model estimation is based on the method of Autoregressive Distributed Lag (ARDL). The study presents evidence of strong negative impact of external debt and current exchange rate on fiscal deficits. It also shows that lagged exchange rate, oil revenues and inflation exert strong positive influence on fiscal deficits in Nigeria. Though the study does not validate significant evidence of fiscal persistence, it does not suggest its complete absence in fiscal operations in Nigeria.

Based on the abovementioned findings, the study concludes that external borrowings, exchange rate, inflation and international oil market dynamics strongly influence deficit financing in Nigeria. It, therefore, recommends that inflation and exchange rate targeting should be a major concern of the monetary authorities in the formulation and implementation of monetary policy. The government should adopt a two-pronged approach of productive investment of oil revenues and economic diversification to broaden the revenue base of the economy in order to reduce shocks transmission from the international oil markets.

Finally, the authors assume that research on institutional and political factors, particularly in developing economies, would further extend the scope of knowledge in this area.

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