



Assessing the Impact of Tax Reform on Sustainable Revenue Mobilisation in Emerging Markets: Evidence from Nigeria

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Abstract

This study assesses the impact of tax reform on sustainable revenue mobilisation in Nigeria. The study employs the quarterly data obtained from Federal Inland Revenue Service records, Central Bank of Nigeria Statistical Bulletin and National Bureau of Statistics from 2011 to 2020. The Johansen Cointegration test and the ordinary least square (OLS) regression technique were used in the analysis, and the result shows that tax reform has a long-run equilibrium relationship with sustainable revenue generation in Nigeria. The results also show that only petroleum profit tax, value-added tax and customs and excise duties significantly influence government revenue. The cointegrated relationship between tax reform and sustainable revenue mobilisation implies that the government should continue with the tax reform agenda to improve economic growth and the welfare of the people. Similarly, the reforms should adhere to international best practices. Finally, the insignificant relationship between company income tax and revenue generation suggests that the government must put up adequate efforts to provide an enabling environment for companies to thrive and make significant tax contributions to the growth of the system.

Keywords: Tax, Reforms, Government, Mobilisation, Revenue

1. Introduction

In recent times, several countries worldwide have struggled to improve the economy and welfare of the citizens due to scarce economic resources. In developing economies like Nigeria, the availability of revenue is essential for the government to deliver economic goods and services to the people. Since the 1970s, Nigeria has generated significant foreign earnings and revenue from sale of crude oil at the global market. However, since the recent decline in oil prices from \$109 per barrel in August 2013 to \$12 per barrel in April 2020 and \$49 per barrel in January 2021, the country has continued to suffer a loss of revenue to support economic undertakings. In addition, the recent global financial crisis and other shocks from the international markets, provide vital lessons for countries like Nigeria to look inwards in resource mobilisation drive (Odhiambo & Olushola, 2018). Against this



backdrop, the Nigerian government has started to pay substantial attention to developing the non-oil sector of the economy. The non-oil sector like the tax system is essential for the government to mobilise sustainable revenue. According to Taiwo, Ilori and Emenike (2019), one of the major expectations of the Nigerian tax system is to improve revenue generation for the government to engage in projects and investments that would better the nation and its people. In the face of such efforts by the government to revamp the non-oil sector, revenue from taxes continued to play a supplementary role to revenue from crude oil available for the government to engage in economic activities. Consequently, reforms have become essential to improve the tax system so as to guarantee sustainable revenue mobilisation for the government. An efficient tax system requires the government to continually engage in reforms designed to expand the tax base, enhance efficiency, reduce taxpayers' burden, and improve revenue mobilisation to support economic activities (Musgrave, 1987; Oriakhi, 2014; Olokooba, 2019).

Since the inception of taxation in Nigeria, there have been many reforms and amendments of tax policies and acts to eradicate fiscal deficits through enhanced revenue generation (Ogbonna & Ebimobowei, 2012; Oti, Ferdinand & Odey, 2016; Olatunde & Ajayi, 2019). In addition, these reforms have been initiated and executed by the government to stimulate productive economic activities, allocate resources and generate employment for the masses. For example, recently, the government enacted the Finance Bill of 2020 to improve ease of doing business and generate revenue to address the budget deficits. According to Nada and Jack (2009), continued tax reforms of policy instruments, administration and enforcement ability of the tax system are essential for the government to raise revenue and provide the citizens with good welfare. Also, Kefela (2009) observed that to have a successful tax system and generate revenue to finance public expenditure, it is essential for the stakeholders, especially the government, to simplify procedures and enact enforceable laws. However, despite the arguments for reforms and the various tax reform initiatives in Nigeria, the Nigerian tax system is still far from providing the expected revenue generation to support economic development. In this instance, borrowing at a high cost to finance budget deficits is one option the government could explore. But with the implications of borrowing, particularly from an external source, the government needs to re-assess ways to reduce expenditures and continually alter the tax structure to raise the required funds from taxes (Odusola, 2006; Ebi & Ayodele, 2017).

Moreover, for a long time, the policymakers and other stakeholders of the economy have been concerned about tax reform and its impact on the tax system and government revenue generation. A number of empirical studies have evaluated tax reforms and revenue generation but with mixed reports about the influence of the different taxes on revenue and economic growth (Odusola, 2006; Ogbonna & Ebimobowei, 2012; Bekoe, Danquah & Senahey, 2016; Olokooba, 2019). Also, the Nigeria tax system has suffered from several challenges such as poor understanding of the concept of tax by both the taxpayers and administrators, poor compliance, multiple taxes, inefficient tax administration, poor infrastructure, structural problems in the system, corruption and bureaucratic tax processes



among others, leading to poor revenue mobilisation and the need for several tax reforms initiative (Oduola, 2006; Olodo, 2014; Micah & Alasin, 2017; Adefeso, 2018). Consequently, this study examines whether tax reforms influence the tax system and sustainable revenue mobilisation in Nigeria. To evaluate the issue of tax reforms in Nigeria, this study attempt to find out to what extent tax reforms impact revenue generation in Nigeria? Also, the study attempt to determine the factors inhibiting the development of the Nigeria tax system and the nature of the relationship between tax reform and sustainable revenue mobilisation in Nigeria. Finally, the study endeavours to make policy recommendations to enhance the tax system to perform optimally and in the most efficient way.

Taxation is an indispensable socio-legal tool employed by the government of a nation to generate revenue for the efficient administration and development of economic endeavours for the people. In addition, it supports the expression of economic and sociopolitical benefits to the citizenry (Olokooba, 2019). For the government to rightly influence the economic conditions of the people, including the demand for goods and services, control inflation, and boost economic growth, there has to be sustainable revenue available to execute budget and other government initiatives. Apart from crude oil, tax is a significant source of generating public funds available to the Nigerian government. The inherent responsibility to provide public goods and services influences government spending, and taxes are one of the sure ways to finance government economic activities and a means of getting citizens' participation in funding. According to Herbert, Nwarogu and Nwabueze (2018), taxation is thus seen as an essential power of the state to secure the funds required to meet its shared obligations. One of the primary expectations from the tax system is to generate stable revenue for the government, and to that end, tax law and acts were established (Adefeso, 2018).

With a significant decline in revenue to the government due to the volatility in crude oil prices and the need to enhance economic growth and development, this study is important because it focuses on Nigeria's tax system to evaluate the connection between tax reform and sustainable revenue generation in Nigeria. This study is unique because in addition to using recent data to evaluate the direction and magnitude of the relationship between the dependent and the explanatory variables, it used the Johansen cointegration to assess the long run equilibrium relationship between the variables. As a result, the study would benefit the policy makers and other stakeholders in the tax system, such as the administrators, consultants, institutions, government at different levels, and other economic agents. The remaining part of this study is organised as follows: In section two, the study reviewed relevant literature, while section three discusses the methodology used in the study. The results from the analysis are discussed in section four, while section five concludes with necessary policy recommendations.



2. Literature Review

Overview of Tax Reforms in Nigeria

Traditionally, taxes have been paid in Nigeria, especially in the Northern Segment of the nation, long before the British tax system was introduced (Eze, 2012). The Northern Traditional Rulers could initiate levies all over the North and get the people to contribute towards charity because of the influence of religion and the organised nature of the emir's administration, and this was primarily responsible for the sound foundation for the direct tax system in Nigeria (Taiwo, Ilori & Emenike, 2019). By 1903, the Northern Protectorate High Commissioner then issued the Stamp Duties Proclamation, and the Native Revenue Proclamation subsequently followed this in 1906 to eliminate the arbitrariness in terms of rates, penalties, procedures, among other issues that characterised the Nigerian tax system before the colonial era (Odhiambo & Olushola, 2018). The system in the North was quite different from the Southern Part of Nigeria, where there was no form of any tax system. However, the traditional monarchs had the privilege to impose levies and utilized such collections the way it pleases them. Furthermore, between 1904 and 1926, when the country introduced the income tax, the Nigeria tax system had witnessed series of reforms till the present time.

The configuration of the present day Nigeria tax system can be traced back to the Proclamation Law of 1914, the Native ordinance of 1917; The Non-natives Protectorates Tax Ordinance of 1931 and the Raisman Fiscal Commission (RFC) of 1958. Raisman Fiscal Commission recommended the normalised standards of tax collection, which was later passed and received by the National Government. Asaolu *et al.* (2015) noted that the suggestions became part of the Nigeria Constitution that brought forward the Petroleum Profit Tax Act (PPTA) of 1959 and Stamp Duties Act (SDA) of 1959. The recommendations launched the Companies Income Tax Act (CITA) of 1961, Income Tax Management Act (ITMA) of 1961 and Personal Income Tax Lagos Act (PITLA) of 1961. However, the Nigerian tax system has been primarily viewed as cumbersome to allow efficient, equitable, fair and improved revenue generation in its administration (Anyanwu, 1997). Consequently, tax reform became something important for the Nigerian tax system to reduce complexity, ensure an efficient, transparent and viable tax system. Also, the reform geared to improve compliance, enhance revenue generation, especially from the non-oil sector of the economy, simplify the process for the stakeholders such as the taxpayers and administrators, improve service delivery to the people and communicate government programmes, among other significant benefits (World Bank 1991; Adefeso, 2018).

As part of the reform agenda, the Nigerian Inland Revenue established in 1943 was granted autonomy in 1945. After that, the government established the Inland Revenue Board in 1958 and the Body of Appeal Commissioners in 1961 to resolve any tax disputes. In 1979, the Federal Government established the Company Income Tax Act (CITA) and the Lagos State Inland Revenue Department (LSIRD). The Companies Income Tax Act (CITA) was



promulgated in 1979. The Federal Inland Revenue Service was established between 1991 and 1992, while tax policy and administration reforms occurred between 2001 and 2004.

Furthermore, to shift focus from unsustainable oil revenue and develop a viable tax system to mobilise revenue to address public expenditures, the government commissioned two Study Groups in 1991. The study groups were to critically examine the current Nigeria tax system and make recommendations on reforms necessary to rejuvenate the system to make it more efficient and impactful on the economy and the welfare of the people. In line with the Study Group's recommendations, the government, by decree 102 of 1993, established the value-added tax (VAT) to replace the sale tax since 1986 and this was a shift towards a consumption-based tax on goods. However, Odusola (2006) noted that value-added tax (VAT) did not take effect until January 1994, and specific goods and services such as medical, books, newspapers, magazine, pharmaceutical product, spare parts, services provided by community banks, among others, were exempted from VAT. Since its implementation in 1994, proceeds from VAT has witnessed several sharing ratios among the three levels of government, namely local, state and federal. Presently, VAT is shared as 35 percent to local government, 50 percent to states and 15 percent to the federal government. To address the issue of multiple taxations and prevent the local and state government from duplicating taxes, the government in 1998 proscribed the use of ad-hoc tax administrators. In the same vein, the government promulgated decree No 21, which allotted the federal government with eight taxes, state government with eleven taxes, and twenty taxes to the local government.

Again, the recommendations of the study group set up in 1991 were further reviewed by a study group in 2002 and a working group in 2003 to make necessary recommendations to the government on reforms essential for the Nigeria tax system. The recommendations from these groups culminated in nine bills from the Federal Executive Council to the National Assembly for consideration and passage into Act. This eventually led to the 2004 tax reform chaired by Ifueko Omoigie Okauru, who was then the chairman of the FIRS. The tax reform Acts of 2004 are the Petroleum Profit Tax Act 2004, Education Tax Act 2004, Value-Added Tax Act 2004, Custom Excise Tariff etc. (consolidation) Act 2004, Federal Inland Revenue Service Act 2004, National Sugar Development Act 2004, Personal Income Tax Act 2004, National Automotive Council Act 2004 and Companies Income Tax Act 2004. Moreover, the government in 2012 launched the national tax policy document to reform the tax system. One of the highlights of the document is the introduction of taxpayers identification number (TIN), which enables the tax authorities to register and store taxpayers' information in the electronic database and expand the tax base that would lead to increased revenue generation in Nigeria. To further improve the tax system, the government in 2007 granted the FIRS autonomy under the FIRS Act 2007. This autonomy confers FIRS the power to be independent, especially in funding, human resources and creation of new departments, and restructuring of the existing ones for efficiency and improved revenue mobilisation.



Part of the measures to reform the tax system and address the current budget deficits by the current administration is the signing of the Finance Bill of 2020 into law on 31st December 2020. The implementation of the Finance Act commenced on 1st January 2021. The bill introduced different changes to the tax laws. The key objective of the Finance Bill is to expand the tax base, promote efficiency and improve revenue generation. Specifically, the bill seeks to promote fiscal equity, provide incentives for investment in infrastructure and capital markets, align the domestic tax laws with international best practices, and increase revenue collection for the government. The bill covers some aspects of the tax law, which are the Companies Income Tax (CIT), Capital Gains Tax Act (CGT), Personal Income-tax Act and Value Added Tax (VAT).

Theoretical Review

Several theoretical studies have been advanced to examine the influence of taxation on the economy and welfare of the people. However, related to this study is the ability theory of taxation developed by Arthur (1920). This dominant theory of taxation posits that eligible citizens or taxpayers should be required to pay taxes based on their capacity, which should be a measure of income, which is seen as the best indicator of ability to pay. In this instance, the poor people in the society should pay fewer taxes to the public purse than the rich since they have a lesser capacity to pay. The ability to pay approach to equity in taxation demands that the tax burden borne by diverse individuals should be similar. The core principle of this theory is that citizens should take the tax burden based on equity and justice (Chigbu, Akujuobi & Appah, 2012). However, one of the key issues with this theory is that it discourages hard work to make more money and quest for success.

Another important supposition of tax reform is the benefit theory advanced initially by Wicksell (1896) and Lindahl (1919), who attempted to design a well-organised and more equitable tax system. This theory asserts that citizens should be required to pay taxes comparable to the economic benefits obtained from the services provided by the government. The theory argued an exchange connection between the taxpayers and the government (Bhartia, 2009). The government bestows some benefits on the taxpayers by providing certain goods and services or providing them with social amenities. In return for these provisions, citizens pay taxes to the government proportionate to what they received (Onwuka & Christian, 2019). The benefit theory enhances a cordial relationship between the government and the taxpayers. In addition, it discourages tax evasion and avoidance and improves revenue generation. However, this theory has several challenges. One of such challenges is that the measurement of the benefits received by individual taxpayers from the government may be very complex to ascertain. The benefit principle is only appropriate in a case where the system can identify the beneficiary. Another issue with the theory is the recognition of taxation, which is a compulsory charge on the residents by the government to support economic activities. With the benefit approach, the poor may be compelled to pay more taxes to the government since they form the buck of the group that depend and benefit more from the various provisions of the government.



Empirical Review

Several studies have examined taxation and its effect on economic growth and development. For instance, Bekoe, Danquah and Senahey (2016) assessed the ability of Ghana's tax reform agenda and the overall tax system to enhance revenue mobilisation from 1982 to 2013. The study employed the proportional adjustment approach (PAA) to appraise Ghana's general tax system regarding buoyancies and elasticities. Overall, the study demonstrated the importance of tax reform on the effort of the country to enhance revenue mobilisation. Specifically, the study revealed a positive impact of the reform programme of the tax system, which indicated that Ghana's tax reforms exhibited buoyancies and contributed significantly to the growth of its revenue base from 1982 to 2013. Similarly, Ouma (2019) used annual data from 1964 to 2016 to explore how tax reforms have affected total revenue from levies and Kenya's economic growth. The study employed descriptive statistics and regression techniques. The findings show that tax reforms positively impacted the overall revenue generation through the different taxes. By extension, the positive influence of tax reforms on revenue brought about the improved connection between the tax revenue and economic output.

Studies on this issue have also been documented in Nigeria. Ogbonna and Ebimobowe (2012) evaluated the influence of tax reform on economic performance in Nigeria from 1994-2009. The study used the descriptive statistics, Johansen test and Granger Causality test to estimate data on Gross Domestic Product (GDP) proxy for economic growth and tax reforms proxied by Company Income Tax (CIT), education tax, Petroleum Profit Tax (PPT), Value Added Tax (VAT), Personal Income Tax (PIT) and customs and excise duties. The results of the analysis showed that tax reform positively impacts economic growth. Moreover, employing annual time series data between 1981 and 2011, Oriakhi and Ahuru (2014) examined the connection between tax reforms and federally tax revenue collection in Nigeria. They used the Augmented Dickey-Fuller for unit root analysis, Johansen Co-integration test, the Granger causality and the Error Correction Model. The result of the study, generally, showed that tax reform improved revenue collection in Nigeria. Specifically, their work indicated that there is cointegration between tax reform and tax income generation in Nigeria. Also, the result showed that VAT and custom and excise duties granger causes government generated revenue. Similarly, Asaolu, Dopemu and Monday (2015) employed quarterly time series data from 1999 - 2012 to evaluate the effect of tax reforms on revenue generation in Lagos state. They reported from the ordinary least square regression analysis that Lagos state tax reforms positively and significantly influenced the revenue performance of the State.

Furthermore, Jelilov, Abdulrahman and Isik (2016) applied data from 1986 to 2012 to evaluate how tax reforms influence Nigeria's economic growth. The ordinary least square regression analysis results indicated that tax reforms have a positive and significant influence on economic growth. Ebi and Ayodele (2017) engaged the error correction model (ECM) and data from 1981 to 2014 to examine the connection between tax reform and tax revenue in Nigeria. The study used data sourced from the Central Bank of Nigeria (CBN)



Statistical Bulletin of various issues, Federal Inland Revenue Service (FIRS) and National Bureau of Statistics (NBS). The results showed that the tax variables representing the tax reforms positively and statistically significantly linked with tax yield at the 5% level. This result suggests that that tax reforms can serve to improve tax revenue. In a related study, Udezo and Onuora (2021) examined tax reforms on revenue output in Nigeria between 1991 and 2018. The study utilized descriptive statistics, Augmented Dickey-Fuller (ADF) statistics, cointegration test and regression technique to estimate data gathered from the National Bureau of Statistics, CBN statistical Bulletin and FIRS. Furthermore, the study deployed Petroleum Profit Tax, Company Income Tax, Value Added Tax and Personal Income Tax to measure the connection between tax reforms and total federal revenue output. The result established that tax reforms positively influence revenue performance at a 0.05 level of significance in Nigeria.

3. Methodology

This study examines the influence of tax reform on sustainable revenue mobilisation in Nigeria from 2011 (Q1) and 2020 (Q4). The study employs quarterly time series data sourced from the Federal Inland Revenue Service (FIRS), National Bureau of Statistics (NBS) and the Central Bank of Nigeria (CBN) statistical bulletin for various years. The study covers federally generated revenue between 2011 and 2020 with 40 sample observations.

The study employs federally generated tax revenue (FGR) as the dependent variable and tax reform as the explanatory variables. Tax reform is the measure taken by the government to enhance the tax system, improve the administration and collection of revenue. According to Oriakhi and Ahuru (2014), revenue generation remains one of the essential indexes or tool to assess performance and get feedback on tax reform in a system. The study adopts value-added tax (VAT), company income tax (CIT), education tax (EDUT), petroleum profit tax (PPT) and custom and excise duties (CED) as proxies for tax reform. This study measured these taxes as the total annual revenue collection from each of them. These variables reflect the contributions of several tax reforms to revenue generation in Nigeria. The variables were transformed into their natural logarithm and measured as the total revenue generated by each particular variable.

Since the study adopts time series data, we test the stationarity of the data using the Philips-Perron and Augmented Dickey-Fuller (ADF) tests. The Johansen Cointegration test is used to establish the long-run relationship between the explained and the explanatory variables. Finally, to determine the direction and degree of influence of the independent variables on the explained variable, the study employs the ordinary least squares regression technique. The regression model is specified in functional form as:

$$FGR = f(PPT, VAT, CED, CIT, EDUT) \dots\dots\dots 1$$

Equation (1) can be re-specified in a stochastic form.

$$FGR_t = \alpha_0 + \beta_1 PPT_t + \beta_2 VAT_t + \beta_3 CED_t + \beta_4 CIT_t + \beta_5 EDUT_t + \varepsilon_t \dots\dots\dots 2$$



Applying the natural logarithm to transform the variables in Equation (2),

$$\ln FGR_t = \alpha_0 + \beta_1 \ln PPT_t + \beta_2 \ln VAT_t + \beta_3 \ln CED_t + \beta_4 \ln CIT_t + \beta_5 \ln EDUT_t + \varepsilon_t \quad (3)$$

Where $\ln FGR$ denotes the natural log of federally generated revenue, β_0 represents constant, β_1 - β_5 indicates coefficients of the respective explanatory variables, $\ln PPT$ represents the natural log of petroleum profit tax, $\ln VAT$ symbolizes the natural log of value added tax, $\ln CIT$ denotes the natural log of company income tax. $\ln CED$ connotes the natural log of custom and excise duties, $\ln EDUT$ signifies the natural log of education tax, ε means stochastic variable or disturbance term, The study expects a significant positive relationship between the explanatory variables and the explained variable.

4. Result

Preliminary Analysis

The study continues with the preliminary analysis of the variables in the model. Table 1 and 2 in the Appendix depict the descriptive statistics and the correlation matrix of the variables. The findings show that the data are normally distributed. The coefficients of the correlation estimate between the explanatory variables are lower than 0.8, which implies that there is no severe issue about multicollinearity among the variables.

The unit root analysis was carried out using the Philips-Perron (PP) and Augmented Dickey-Fuller (ADF) test. Since the analysis using both the PP and ADF test reveals the same results and for want of space, the study reports the results from PP. As conveyed in Table 1, the result of the PP analysis reveals that all the variables were stationary and significant at 5% after the first differencing. The results of the unit root were further confirmed using the ADF test. Thus, the study established that the variables are integrated of order one. This conclusion is based on the outcome of the comparison of the Philips-Perron statistics with the Mackinnon (1999) critical values. The finding helps to eliminate the likelihood of obtaining spurious results. Now that the stationarity of the data is established and the variables are confirmed to be integrated of order one after first differencing, it is safe to proceed with the cointegration test to ascertain the relationship that exists between the variables.

Table 1: Result of unit root analysis using PP test

Variable	At Levels			Variable	At First Difference		
	PP	TCV @ 0.01 Levels	Remark		PP	TCV @ 0.05 Levels	Remark
$\ln FGR$	-4.1605	-3.9115	stationary	$\ln DFCR$	-6.0563	-4.1561	Stationary
$\ln CIT$	-6.5112	-3.9115	Stationary	$\ln DCIT$	-12.0748	-4.1561	Stationary
$\ln PPT$	-3.1940	-3.9115	Non-stationary	$\ln DPPT$	-6.8115	-4.1561	Stationary
$\ln VAT$	-4.2253	-3.9115	stationary	$\ln DVAT$	-6.3905	-4.1561	Stationary
$\ln CED$	-4.2002	-3.9115	stationary	$\ln DCED$	-11.4782	-4.1561	Stationary
$\ln EDUT$	-3.0066	-3.9115	Non-stationary	$\ln DEDUT$	-9.4806	-4.1561	Stationary

Source: Authors' Computation, 2021



Cointegration Test

The study employs the Johansen cointegration test to ascertain whether a long-run equilibrium relationship exists between the explanatory and dependent variables. In Table 2, the result of the Johansen cointegration test using both trace statistics and maximum Eigenvalue points out that the variables have a long-run equilibrium relationship at the 5% level of significance. In other words, the trace statistics and maximum Eigen value statistic does not reject the existence of no co-integrating vectors among the variables at the 5% level. This outcome suggests that there is cointegration amongst the variables.

Table 2: Result of Co-integration Test

Hypothesised number of CE (s)	Eigen-value	Trace statistic			Maximum eigenvalue statistic		
		Trace statistic	0.05 critical value	Prob.	Max-Eigen statistic	0.05 critical value	Prob.
None**	0.9145	111.0193	95.0014	0.0000	68.0240	64.5632	0.0000
At most 1**	0.8836	104.1008	85.1336	0.0000	61.2888	57.0001	0.0000
At most 2**	0.7630	88.6144	79.1186	0.0000	55.1030	43.0633	0.0000
At most 3**	0.6201	57.2222	46.8111	0.0519	36.0635	33.6453	0.0130
At most 4	0.3548	25.1916	29.0079	0.0640	21.0511	23.0006	0.1745
At most 5**	0.2126	19.0935	11.4947	0.0310	13.1916	7.6113	0.0001

Source: Authors' Computation, 2021.

Note: ** indicates rejection of the null hypothesis at the 0.05 level of significance

Influence of Tax Reform on Revenue Generation

Table 3 reveals the result of the regression analysis. The result indicates that the R² is 0.881370, which suggests that 88% of the variability in federal government generated revenue is accounted for by the explanatory variables in the study. The F-test is statistically significant, and this suggests that the model is of good fit. The Durbin-Watson statistic of 2.093042 demonstrates no autocorrelation issue amongst the variables in the study. The result shows that tax reform proxied by petroleum profit tax, value-added tax, company income tax and custom and excise duties all have a positive impact on federal government generated revenue in Nigeria. Except for company income tax, all other taxes have a significant impact on revenue generation. Thus, it is safe to mention that tax reform positively influences sustainable revenue generation in Nigeria.

The positive relationship between revenue generation and tax reform proxy as petroleum profit tax, company income tax, custom and excise duties, education tax, and value-added tax is consistent with previous studies (Onalapo *et al.*, 2013; Oriakhi & Ahuru, 2014; Onwuka & Christian, 2019). The long-run symmetry association between revenue generation and tax reform demonstrates the need for continuous improvement on the tax system to guarantee, in the long run, better revenue generating strength of the government in Nigeria. However, the results show that the government generates more revenue from the petroleum profit tax and customs and excise duties than the company income tax. This is evident in their coefficients, which suggests that a 1% increase in each of the explanatory variables will bring a higher percentage increase in revenue generated from the petroleum



profit tax and customs and excise duties than company income tax. A surprising aspect of this study is the insignificant impact of company income tax on revenue generation in Nigeria. This result speaks volume about the challenges and difficulties faced by businesses in the environment. Over time, there has been a call by the stakeholders of the economy for the government to improve the ease of doing business by providing basic infrastructures such as electricity, roads, communication and others. Owners of businesses in Nigeria have long complained about the harsh environment which affects economic activities and the need for the government to intervene.

Table 3: Results of the Ordinary Least Square Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.304272	0.710453	0.428279	0.4017
LOGPPT	0.401411	0.043392	9.250807	0.0000
LOGCIT	0.203582	0.011419	2.226911	0.8633
LOGCED	0.111188	0.063784	1.743196	0.0300
LOGVAT	0.414449	0.108530	3.818715	0.0005
LOGEDUT	0.538329	0.195632	2.751743	0.6031
R-squared	0.881370	Mean dependent var		7.011024
Adjusted R-squared	0.750098	SD dependent var		0.232336
SE of regression	0.065222	Akaike info criterion		-1.927734
Sum squared resid	0.320024	Schwarz criterion		-1.705741
Log likelihood	39.11592	Hannan-Quinn criter.		-1.900058
F-statistic	63.14082	Durbin-Watson stat		2.093042
Prob(F-statistic)	0.000000			

Source: Authors' computation, 2021

Furthermore, the poor contribution of company income tax to Nigeria revenue suggests to low economic activities. To a large extent, the disposable income and the purchasing power of a country currency determine the level of economic activities of companies operating in such an environment. Once there is a weak purchasing power in the case of Nigeria in recent times, companies are bound to have low patronage of their goods and services, which may in turn, affect the profit margin and the ability of the firm to pay taxes. To address this challenge, the government will need to improve the environment and give incentives to companies still operating but struggling to survive the harsh environment. In addition, the government should engage in aggressive infrastructure development and economic diversification from crude oil to improve foreign earnings and create more employment for the growing population. The citizens should be encouraged to engage in international trade, particularly the export of local products. Such improvement in revenue using tax reforms will assist the government in mitigating the adverse effect of the decline in crude oil prices at the global market.



Diagnostic Test

Table 4 shows the result of the Breusch-Godfrey LM test for serial correlation. The result reveals a p-value of 0.5012, which is greater than the 0.05 critical value. This result implies that there is no presence of autocorrelation with the variables. The White test for heteroskedasticity indicates a p-value of 0.3625. This result demonstrates no indication for heteroskedasticity since the p-value is more significant than the 0.05 value. Given the p-value of 0.1363 for the Jarque-Bera test, the result indicates a normally distributed model at the 0.05 level of significance. Furthermore, the Ramsey RESET test result for functional form reveals a p-value of 0.4053 for the F-statistic. This result suggests that the model does not suffer from misspecification at the 5% level of significance due to omitted variables. In other words, the finding means the linear model is appropriate for the study.

Table 4: Diagnostic Test

Null hypothesis	Test method		Value	P-value
No serial correlation	Breusch-Godfrey LM	F-statistic	1.4537	0.5012
		Obs*R-squared	3.2740	0.1164
		F-statistic	0.4426	0.3625
No heteroscedasticity	White (Chi-square)	Obs*R-squared	7.0164	0.2863
Normality	Jarque-Bera	F-statistic	11.0001	0.1363
	Ramsey RESET	F-statistic	0.4835	0.4053
Functional form		Log likelihood ratio	0.5553	0.3229

Source: Authors' Computation, 2021.

5. Conclusion and Recommendations

The study evaluates the impact of tax reform on sustainable revenue mobilization in Nigeria between 2010 and 2019. The study used the regression technique to analyse federal government generated revenue and tax reform proxied as petroleum profit tax, education tax, value-added tax, company income tax and custom and excise duties in Nigeria. With the recent drop in oil price, understanding the influence of tax reform is essential for the government to broaden the revenue base. Except for company income and education taxes that have a positive but an insignificant influence on revenue, all other taxes positively and significantly impact federal government revenue generation. The positive and substantial relationship between federal government generated revenue and tax reform suggests that the government can improve revenue generation using various tax reforms. The findings indicate that the government can use taxes to bridge the revenue shortfall from sale of crude oil to finance multiple initiatives. The results demonstrate that the government can use the instrument of tax reforms to encourage tax compliance, mitigate tax evasion, reduce tax avoidance and improve revenue generation. In other words, the result of this study implies that revenue collected from taxes is essential to explain revenue growth and



enhance the welfare of the citizens through investment in infrastructure, education and other economic activities.

Following the results of this study, the current level of economic development and the need to improve the welfare of the citizens through deliberate investment in infrastructure, government should continually create the enabling environment for economic activities to thrive and boost revenue generation from taxes. Disposable income should be improved to increase both the company income tax and value added tax in the short-run and long-run. Also, the government must ensure that proceeds from taxes are correctly utilised to provide taxpayers with tax benefits, which will further encourage compliance and accelerate tax revenues. Considering the decline in revenue from the sale of crude oil, the government should embark on more reforms and sensitisation of the taxpayers to bring the informal segment into the tax net, improve compliance and revenue generation for economic activities relating to value added tax. The government in conjunction with other stakeholders of the economy should enhance the infrastructure to boost revenue from custom and excise duty. Also, the government should diversify the economy to other sectors to create varying sources of sustainable revenue to curb any external shocks. Further studies should emphasis on revenue generation across the different levels of government because studies on the challenges of tax reforms and administration in Nigeria and beyond are essential in deepening the frontier.

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Appendix

Table 5: Descriptive statistics

Variables	Obs.	Mean	Std. Dev.	Minimum	Maximum	Jarque-Bera
InFGR	40	0.5905	0.3994	6.3348	9.5619	0.0000
InPPT	40	0.6069	0.3015	5.1747	8.8260	0.0000
InVAT	40	0.0434	0.0185	5.0289	7.4656	0.0014
InCED	40	8.0808	3.0108	4.7326	7.3165	0.0041
InCIT	40	0.0311	0.0298	0.2503	2.6000	0.0191
InEDUT	40	11.6114	0.5203	0.0453	1.3621	0.0244

Source: Authors' computation. 2021.

Table 6: Correlation matrix

Variable	InFGR	InPPT	InVAT	InCED	InCIT	InEDUT
InFGR	1.0000					
InPPT	0.0301	1.0000				
InVAT	0.0511	0.0413	1.0000			
InCED	0.0431	0.0330	0.0190	1.0000		
InCIT	0.0333	0.0248	0.0531	0.0422	1.0000	
InEDUT	0.0116	0.0344	0.0275	0.0310	0.0192	1.0000

Source: Authors' computation. 2021.