EFFECT OF REAL SECTOR OUTPUT ON TAX REVENUE IN NIGERIA.

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Abstract:
Tax revenue has remained the most reliable and controllable source of revenue to governments all over the world. This is however not the case in Nigeria as tax revenue accounts for a small proportion of government revenue. This study therefore investigated the influence of real sector output on tax revenue in Nigeria. Ex-post facto research design was adopted using validated macro data obtained for the period 1981-2017. Various tests including descriptive statistics, trend analysis, and stationary tests using Augmented Dickey Fuller (ADF) test were conducted. The ARDL bound test was employed to determine the existence of long run relationship between the variables. The study concluded that real sector output, controlling for inflation rate and exchange rate, has significant positive influence on tax revenue generation in Nigeria (Adj. R^2 = .603, $F_{(33,3)}$ = 417.033, p < .05). Furthermore, exchange rate and inflation rate had significant moderating effect on tax revenue in Nigeria. Also, the result of the granger causality test revealed non-existence of bi-directional relationship between real sector output and total tax revenue. The study recommended that government should intensify effort on stimulating growth in the real sector of the economy in order to achieve sustainable increase in tax revenue. In addition, government's macroeconomic policies on exchange rate and inflation rate should be undertaken in a way to optimize tax revenue.

Keywords: Economic growth, Exchange rate, Inflation rate, Real sector output, Tax revenue, Government policy

JEL Classification: C33, D9, H2

1   INTRODUCTION

Governments all over the world are currently witnessing enormous challenges on raising adequate revenue to fund their activities, which include the provision of public goods, maintenance of law and order, defense against external aggression, regulation of trade and business (Abiola & Asiweh, 2012; Edame & Okoi, 2014; and Takumah & Iyke, 2017).The ability to fulfill these responsibilities largely depends on the amount of revenue generated by the government through various means. Taxation is one of the oldest means of financing government activities (Bird & Casanegra de Jantscher, 1992; Gupta, 2007). Suberu, Ajala, Akande and Olure-Bank (2015) posited that revenue generation is one of the most critical responsibilities of government.

The Nigerian tax system rests on a tripod namely: tax policy, tax laws and tax administration (Somorin, 2015). The tax policies are formulated by the executive arm of government at both the Federal and State levels of government. Tax policies drive the tax laws

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while tax authorities administer the laws. As an organic system, the Nigerian tax system has evolved over the years and continues to evolve. In this regard, several tax legislative, policy and administrative reforms have been undertaken. Some of such reforms include the 1978 Task Force on Tax Administration, the 1991 Study Group on the Nigerian Tax System and Administration, the 2002 Study Group on the review of the Nigerian Tax System.

According to Somorin (2017), notable outcomes of these reforms include the introduction of Value Added Tax Act of 1993, the grant of administrative and financial autonomy to the Lagos State Internal Revenue Service in 2006 and a year later to the Federal Inland Revenue Service in 2007, and also to a number of Board of Internal Revenue Services. The reforms has led to the introduction of functional-based organization structure and integrated (one-stop-shop) tax offices, automated payment of taxes, recruitment of professionals into tax administration; modernization of offices and administration processes, the establishment of a Tax Policy Unit in the Federal Ministry of Finance, amendment of tax laws and enactment of new ones among others. These changes have had salutary effects on the tax system, including the expansion of tax base, improvement in tax collection processes and tax revenue yield, promotion of voluntary compliance, reduction in corruption by tax officials and the improvement of the tax consciousness of the citizenry.

Samir- ul-Hassan, Biswambhara, Mishra, Srinivasa and Suresh (2017), Entela and Liambi (2014) and Collier (2009) and Bird, Martinez-Vazquez & Torgler (2008) opined that the determinants of tax revenue can be broadly classified into tax collection efforts and tax buoyancy. Tax collection effort measures the effectiveness of the tax system (tax administration, tax policy and tax laws), whereas tax buoyancy measures response of tax revenue to changes in GDP. Barrack and John, 2016 stated that tax buoyancy is the capacity of the tax system to respond to changes in GDP. Adam (1776) in his book on Wealth of Nation stated that economic growth depends on the amount of factors of production viz; land, labour and capital. He argued that economic growth depends on the amount of these factors of production which are the inputs that are determined by population growth, increase in investment and land, and labour productivity. Consequently, the aggregate of wealth of the nation remains the platform for economic growth through which taxes are generated by government.

Growth in the Nigerian economy in recent years has been significantly less than in previous years. This decrease can be attributed to the decline in the oil price as well as non-oil sectors that suffered setbacks due to political political uncertainty coupled with supply shocks weighed on economic activity. In particular however, Nigeria depends heavily on oil for both exports and government revenues, and therefore movements in the oil price have a large effect on the economy (Kale, 2016). According to Dasislava (2017), Nwaeze and Nwaeze (2014),

Loganathan, RoshaizaTaha and Kogid (2013). Tax revenue has remained the only reliable and controllable source of revenue to most government in the world. This is however not the case in Nigeria as tax revenue accounted for a small proportion of total government revenue since Nigeria discovered crude oil in 1970 (Fashina, 2016 and Otu & Adejumo, 2013). Unfortunately, the effort of government on economic growth, through various intervention programs, such as Sustainable Development Goals (SDG) and Economic Recovery Growth Plan (ERGP), is yet to achieve desired result as posited by Bello (2017) and Afuberoh and Okoye (2014). For instance, Tax to Gross Domestic Ratio (GDP) of Nigeria is currently about 6%, which is far lower than 17% in Sub Saharan Africa and 34% in most developed countries as stated in the 2017 economic report of Nigerian National Bureau of Statistics. The extent to which real sector output influences total tax revenue is therefore a challenge.

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Previous studies have consistently looked at the impact of tax revenue on economic growth but not many have looked at the influence of economic growth on tax revenue. The concern of this study is premised on the fact that tax revenue is the fruit on the tree (i.e. the economy) and not the tree. Understanding the effect of economic growth from various sectors of the economy will focus attention of government to stimulate economic growth with spill over on tax revenue. This study examines the influence of output from all the real sectors (agriculture, manufacturing crude petroleum, solid minerals, construction, trade and non-financial service sectors) on tax revenue in order to address the issue of low tax revenue in Nigeria.

2   LITERATURE REVIEW

2.1   Conceptual Review

2.1.1   Total Tax Revenue (TTR)

Total tax revenue is the aggregates of all revenue collected by the Federal Government. Taxes collectible by federal government of Nigeria are Companies income tax, Withholding tax on companies, residents of the Federal Capital Territory, Abuja and non-resident individuals. Petroleum profits tax, Value added tax, Education tax, Capital gains tax on residents of the Federal Capital Territory, Abuja, bodies corporate and non-resident individuals, Stamp duties on bodies corporate and residents of the Federal Capital Territory, Abuja, Personal income tax in respect of a) members of the armed forces of the Federation; b) members of the Nigeria Police Force; Residents of the Federal Capital Territory, Abuja; and staff of the Ministry of Foreign Affairs and non-resident individual and lastly National Information Technology Levy (Added by Order 2015). According to the 2017 bulletin of the Central Bank of Nigeria, Company Income Tax, Petroleum Profit Tax, Value Added Tax and Customs and Excise Duties constituted over eighty five per cent (85%) of taxes collected by Federal Government of Nigeria. In this study, total tax revenue represents aggregate of revenue collected by federal government from Company Income Tax, Petroleum Profit Tax, Value Added Tax, and Customs and Excise Duties.

2.1.2 Real Sector Output

The real sector output is the value of goods and service country in agricultural, industrial (i.e. manufacturing, crude petroleum and solid minerals), construction, wholesale and retail trade and non-financial services sectors in a particular year. It is measured by GDP. The Central Bank of Nigeria classifies the real (activity) sector in Nigeria into agricultural, industrial (i.e. manufacturing, crude petroleum and solid minerals), construction, wholesale and retail trade and non-financial services sectors. Investors in these sectors often seek financial succour from the financial sector to boost production and increase yields. The real sector is where goods and services   are   produced   through   the   combined   utilization   of   raw   materials   and other production factors such as labour, land and capital. It therefore forms the main driving force of any economy, and the engine of economic growth and development. It is the part of the economy that is concerned with actually producing goods and services, as opposed to the part of the economy that is concerned with buying and selling on the financial markets

The real sector is responsible for the production and distribution of goods and services necessary to meet the consumption demand of an economy. It drives economic growth and

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development, and provides an indication on the effectiveness of government's fiscal policies. In addition, the real sector facilitates the creation of economic linkages with other sectors and helps in capacity building, employment and income generation.

2.2   Theoretical Framework

This study is anchored on Keynesian theory of taxation. British economist John Maynard Keynes developed this theory in 1936. The theory suggests that economic growth is related to monetary savings and that surplus savings must be subtracted with the help of taxation. One of the main assumptions in Keynes's theory is that large amounts of savings hinder economic growth as they represent a passive form of income and are not invested in production; as a result the author suggested that surplus savings must be subtracted with the help of taxation. While the Neo-Classical theory of taxation suggest that taxes must be as small as possible and corporations should be granted significant tax exemptions, the Keynesian theory argued that high level progressive taxation is necessary and that low tax rates lead to reduced state revenues and as a result contributes to economic instability. This implies that growth in economy should translate to increase in tax revenue. Keynesian theory attempt to explain establish that economic growth promotes long run growth in tax revenue. Hence, this theory serves as the bedrock of this study.

.2.3   Empirical Review

On the empirical ground, diverse empirical studies have, investigated the effects of real sector output on tax revenue and also the moderating effect of inflation rate and exchange rate on tax revenue. Results are far from being conclusive, varying across countries, methodologies, and fiscal variables involved. This section examines empirical works from prior studies. The study of Workineh (2016) on Ethiopia economy discovered that gross domestic product has significant positive long run influence on tax revenue. The result is in line with the studies of Karagöz (2013), Gupta (2007) and Chelliah (1971) conducted in many least developed countries, where economic development helps to increase taxpayer's ability to pay tax and improve efficiency of tax authorities in tax collection in the long run. It is also consistent with the findings of Loganathan, Ismail, Streimikiene, Hassan, Zavadskas, and Mardani, (2017).

Belay (2016) investigated the determinants of tax revenue performance in Ethiopian federal government by using time series data. The variables used were foreign direct investment, public debt, openness, foreign aid, and gross domestic product. The study employed both descriptive and time series regression method as well as E-views software for analysis purpose. Also post positivism research approach has been used. The trend of tax collection in Ethiopia is inconsistent, changing upward and downward depending upon economic conditions (GDP). Brahima and Dhruv (2018) on Mobilisation of Tax for Africa - State of Play and Policy Option discovered that Sub-Saharan Africa faces a sizeable shortfall in financing for investment, estimated at about $230 billion a year, on average, over the next five years period ending 2023. It was reported that the shortfall was due to low domestic savings rates, partly as tax revenue collection continues to underperform notwithstanding recent economic growth. Contrarily, Raed, Iriqat, Ahmad and Anabtawi (2016) conducted an empirical study on the causality relationship between Gross Domestic Product and its components with Tax revenues in Palestine using secondary data from Palestine monetary Authority during (1999-2014); they discovered that the tax revenues do not granger cause each of the Palestinian Gross Domestic Product.

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Similar studies carried out by Aggrey (2013) on developing countries revealed that more than half of the tax revenue collected cannot be traced by government treasuries due to corruption and tax evasion. In addition, the negative result might be because theory suggests that economic growth has different impact on different category of taxes. For instance, in developing countries direct tax ratios are lower than indirect taxes and there exists sizable tax evasion in direct taxes (Chaudhry & Munir, 2010).

Muibi & Sinbo, 2013 opined the level of economic growth that has impacted positively on tax revenue in Nigeria. The general conclusion is that macroeconomic instability and degree of economic activities are the main drivers of tax buoyancy and tax effort in Nigeria. Moore, (2013) made an attempt to identify the obstacles of tax revenue generation in developing countries. His study showed that the structure of economies and low income of these countries are responsible for their low tax revenue generation. Roshaiza, Loganathan and Sisira (2011) on the effect of GDP on tax revenue in Malaysia during the period of 1970-2009 clearly revealed that there is unidirectional relationship between economic growth and total government tax revenue, with 21% speed of adjustment in the short run to reach equilibrium level in the long run. It recommended that policy makers should consider for effective taxation policy formulation and implementation in line with the dynamic nature of the country's economy. This was supported by Brender and Navon (2010) and Joaquim (2013) in their observation of existence of long-run relationship between GDP and tax-revenue and GDP in Israel and Eurozone countries respectively.

Addison and Levin (2012) identify the determinants of tax revenue in sub-Saharan Africa using an unbalanced panel dataset of 39 countries over the period 1980-2005. They also conducted the analysis of how the determinants affect tax components. Firstly, the results suggest that the significant positive influence of GDP is positively significant on tax revenue in less agricultural dependent economies. Gupta, (2007) analyzed the determinants of tax revenue in developing countries where, he found that the structural factors such as per capita GDP,

Tosun and Abizadeh (2005) examine the effect of economic growth on tax changes in OECD countries from 1980 to 1999 and discovered that economic growth measured by GDP has a significant positive effect on tax revenue. Similar study of Khattry and Rao (2002) estimated determinants of total tax revenue using a fixed-effects regression framework based on a sample of 80 countries over a period covering 1970-98. The study found that GDP has been significant in explaining the decline of income tax revenues in low-income countries. Also agriculture share in GDP, trade openness and foreign aid significantly affected tax revenue performance of an economy. He also showed that corruption, political stability and share of direct and indirect taxes also determines tax revenue in developing countries.

Ebrill (1999) used two panels from Africa, Asia and the Western Hemisphere: first is a panel of 27 countries covering the period 1980 to 1992 and the other is a panel of 105 countries, spanning 1980 to 1995, to examine two complementary models of the determinants of customs and excise duties. They find that, in both panels, exchange rate is significantly negative effect on trade tax revenues, confirming Tanzi's hypothesis, but contrasting with Ghura (1998), which did not find a significant relation. According to Stotsky and WoldeMariam (1997), GDP and inflation have significant positive impact on tax revenue. In contrast, Agbeyegbe, Stotsky and Asegedech WoldeMariam (2004) opined that exchange rate and inflation rate have significant negative relationship with tax revenues or its components. Also, Aloo (2012) on the study of tax revenue using regression analysis showed exchange rates positive effects on tax revenue while and GDP has negative effects on tax revenue.

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3.   METHODOLOGY

This study is an empirical survey research, thus, *ex-post facto* research design was adopted. It is an *ex-post facto* research because the study used existing data without manipulating them. This decision to adopt ex-post facto research design is further supported by the availability of un-manipulated data from secondary sources in analyzing the relationship between real sector output and tax revenue in Nigeria. The study conducted a post-effect review of real sector output proxy by sectoral real GDP from all sectors (agriculture; manufacturing; crude petroleum; solid minerals; construction; trade; and non-financial service); total tax revenue (i.e. Company Income Tax, Petroleum Profit Tax, Value Added Tax and Customs& Excise Duties); and the moderating effect of exchange rate and inflation rate on tax revenue, using revenue and economic data as obtained from Federal Inland Revenue Service Central Bank of Nigeria (CBN), Nigeria Bureau of Statistic (NBS)**.** It covered the existing gaps in the literature on real sector output and tax revenue in Nigeria. This type of design is one that is non-experimental in which pre-existing groups are compared on some dependents variables (Lammers & Badia, 2005). *Expost facto* research design is used because it involves the use past records in order to determine the present association and to develop a predictive model of forecasting the future relationship that may exist between the variables (Akinyemi, 2016).

3.1 Model Specification

$$LTTR_t = \gamma_0 + \gamma_1 GDPRSO_t + \gamma_2 LEXR_t + \gamma_3 INFR_t + \mu_{6t} \ldots\ldots\ldots(1)$$

Where, dependent variable = Total Tax Revenue (TTR) and independent variable is Log of GDP of Real Sector Output (LGDPRSO), while control variables are Log of Exchange Rate (LEXR) and Inflation Rate (INFR) and γ_0 is the intercept; γ_1, γ_2, γ_3 are the coefficients of the explanatory variables; t represents the periods under study; μ_t are the error or disturbance terms that absorb the influence of omitted variables in the proxies to be used

3.2 Data Analysis

The characteristics of the series in the distribution and the models were explained through the descriptive statistics; co-integration analysis to assess the influence of real sector output proxy by GDP, exchange rate and inflation rate on tax revenue; the scope of this study is to examine the long run effect of real sector output, inflation and exchange rate on total tax revenue. In order to determine the existence of long run relationship, ARDL bounds test was adopted as this test depicts both the short run and long form of the relationship between the dependent and independent relationships through the aid of E-view (Version 9.0), , both in magnitude and relevance of the influence of explanatory variables on the dependent variables as specified in each of the six models are explained in details while the interpretation was carried out on which the decision to accept or not to accept the hypothesis of the study are drawn from.

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4. FINDINGS AND DISCUSSIONS

4.1. Descriptive Statistics

Table 1: Descriptive Statistics for Real Sector Output, Inflation Rate, Exchange Rate and Tax Revenue

Variables	Mean	Median	Max.	Min.	Std. Dev.	Skewness	Kurtos	Jacque-Bera	Obs
LTTR	5.57	5.53	8.56	1.8	2.36	-0.22	1.59	3.36 (0.19)	37
LGDPRSO	10.25	10.02	11.14	9.53	0.55	0.39	1.7	3.57 (0.17)	37
INFR	20.04	12.14	76.76	0.22	18.46	1.62	4.63	20.24 (0.00)	37
EXR	81.48	97.95	305.25	0.64	76.82	0.62	2.83	2.39 (0.30)	37

Notes: Table 1 shows the mean, median, maximum, minimum, standard deviation, skewness, kurtosis and Jarque-Bera test for normality of the variables. The dependent variable is Log of total tax revenue (LTTR). The explanatory variables are: GDP of the real sector (GDPRSO), inflation rate (INFR) and exchange rate (EXR) for the period 1981-2017 in Nigeria. The estimation process was facilitated using E-views 10.

Looking at the mean and the median values of all the series in the distribution, the mean and the median are averagely of the same value, as this is one of the assumptions of normal distribution, thus the series can be said to be normally distributed. Also, the results of the standard deviation which measures the dispersion of the series from the mean reveal that all the series in the distribution sparingly dispersed from the mean. This indicates the possibility of the series exhibiting traits of normal distribution. This is also confirmed from the results of the skewness, as nearly all the skewness value are within the average of the threshold (0), this is an indication that the series in the distribution are slightly skewed either positively or negatively but approximately normal in distribution. From the ρ-value of the Jacque-Bera test, a test for normality; since all the ρ-values are greater than the significant level of 5 per cent, thus the null hypothesis which states that the series are normally distributed cannot be rejected. In conclusion, the results of the standard deviation, skewness and Jacque-Bera confirmed the normality of the series in the distribution.

4.2 Result of the Stationary Test

Stationary test is conducted to examine the time series patterns of series over time, so as to determine the behaviour of the series if it follows an upward or downward trend. In this study, the Augmented Dickey Fuller (ADF) unit root test was used to test for stationary in the series and the result is presented in Table 2.0.

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Table 2.0 Result of the Unit Root Test

Variables	@ Level		@ First Difference		Remarks
	ADF test (Prob.)	Critical Value @	ADF test (Prob.)	Critical Value @	
LTTR	-1.50	-3.50	-6.26	-2.93	I(1)
LGDPRSO	-2.28	-3.50	-3.23	-2.93	I(1)
INFR	-3.04	-3.50	-5.63	-2.93	I(1)
LEXR	-1.53	-3.50	-5.44	-2.93	I(1)

Source: Researcher's Computation, (2019)

Notes: Table 2 presents the unit root test and the dependent variables are custom and excise duties (CED), company and income tax, (CIT), value added tax (VAT), petroleum and profit tax (PPT), total tax revenue (TTR). The explanatory variables are GDP of the agricultural sector (GDPAG), GDP of the construction sector (GDPCO), GDP of the crude petroleum sector (GDPCP), GDP of the manufacturing sector (GDPMA), GDP of the real sector (GDPRSO), GDP of the service sector (GDPSE), GDP of the solid minerals sector (GDPSM), GDP of the transport sector (GDPTR), inflation rate (INFR) and exchange rate (EXR) for the period 1981-2017 in Nigeria. The estimation process was facilitated using Eviews 10.
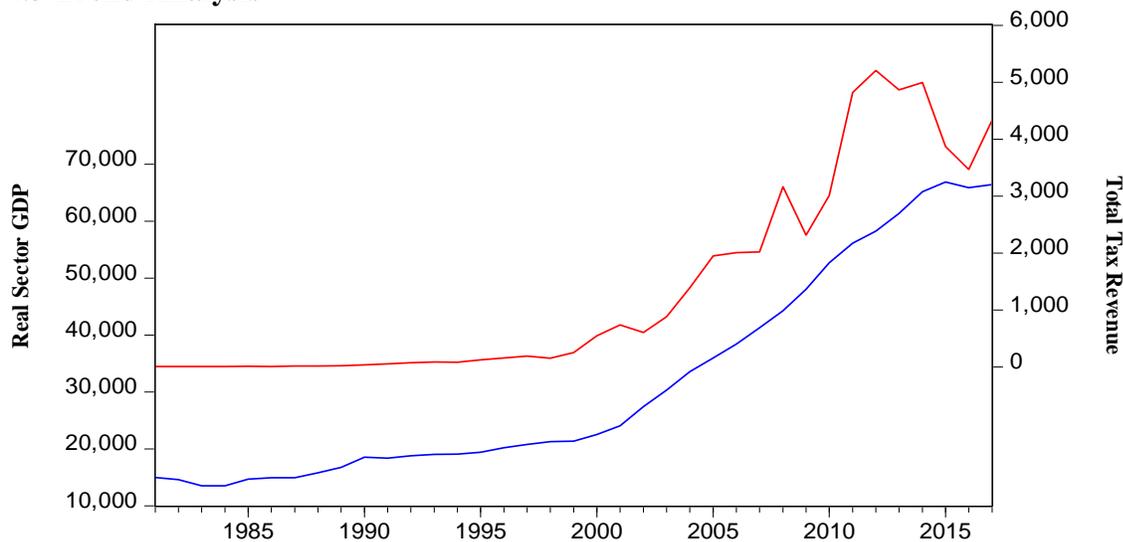
4.3 Trend Analysis

Figure 4.1: Trend Analysis of Real Sector GDP and Total Tax Revenue ('# Billion)

Figure 1 shows the plots of total tax revenue and real sector output in Nigeria. The figure shows that over the years total tax revenue and real sector output have been on the increase over time. It was however, observed that in 2007- 2009 there were fall in the total tax revenue this is however not unconnected with the global meltdown occasioned with persistent high prices and exchange rate depreciation. In addition, there is evidence that the real sector output also increases at a decreasing rate during this period and thereafter there is growth in the both variables not

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until 2014 were the total revenue nosedived as a result of the fall in the price of the oil price and this is feasible because Nigeria mainstay is the revenue from oil prices.

4.4 Regression analysis

Table 3. Full Information on the Effects of Real Sector Output on Total Tax Revenue

Panel A: Long Run Estimates				
Dependent Variable: LTTR				
Variable	**Coefficient**	**S.E**	**t-stat**	**Prob**
C	-8.695	2.573	-3.380	0.003
LEXR	0.889	0.077	11.602	0.000
INFR	-0.009	0.004	-2.413	0.024
LGDPRSO	1.149	0.265	4.330	0.000
Panel B: Diagnostic Tests		**Statistic**	**Prob.**	
Bound Test		7.221	0.000	
Serial Correlation		0.264	0.770	
Heteroscedasticity		0.652	0.727	
Normality Test		0.994	0.608	
Linearity Test		0.068	0.946	
Adjusted R-Square		0.603		
F-statistic		417.033		
Prob(F-statistic)		0.000		

Notes: Table 3 reports the long-run estimates and the diagnostic tests for the relationship between total tax revenue and real sector output; inflation rate; and exchange rate. The dependent variable is the logarithm of total tax revenue and the independent variable is the logarithm of real sector output, inflation rate and exchange rate.

4.5 The long run estimate

LTTR= -8.695 + 1.149GDPRSO + 0.889LEXR– 0.009INFR

The estimated long-run coefficients (elasticities) for the UECM model are given in the tables Panel A of Tables 3. In the long run, there is evidence that exchange rate and real sector output have positive relationship with total tax revenue, while inflation rate has a negative relationship with tax revenue. This implies that increases in real sector output and exchange rate will lead to increase in the total tax revenue, while increases in inflation rate will lead to fall in the tax revenue. In addition, there is evidence of a long-run significant relationship for exchange rate, inflation rate and real sector output with total tax revenue in Nigeria ($\alpha_1 = 0.889$, t-test= 11.602, $\rho<0.05$; $\alpha_2 = -0.009$, t-test= -2.413, $\rho<0.05$ and $\alpha_3 = 1.149$, t-test= 4.33, $\rho<0.05$; .This implies that real sector output, inflation rate and exchange rate are significant factor s influencing changes in total tax revenue in Nigeria. Also, a 1 per cent increase in real sector output and exchange rate will lead to 0.889 and 1.149 per cent increase in total tax revenue respectively in

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Nigeria in the long run, while 1 per cent increase in inflation rate will lead to 0.009 decreases in total tax revenue.

In addition, real sector output, exchange rate and inflation rate had joint significant effect on total tax revenue (*Adj. R^2=0.60, $F_{(3, 34)}$ = 417.03, $p<0.05$*). Considering the fact that disaggregated real sector output, exchange rate and inflation rate had joint significant effect on total tax revenue (*Adj. R^2=0.60, $F_{(3, 34)}$ = 417.03, $p<0.05$*), this study therefore do not accept the null hypothesis which states that "Real Sector Output (GDPRSO), Exchange Rate and Inflation Rate do not have significant effect Total Tax revenue in Nigeria".

4.6 Granger Causality Results

Table 4.10 Granger Causality Test		
	Test Value	
LTTR≠>LGDPRSO	1.627	0.44
LGDPRSO ≠> LTTR	5.169	0.07[***]

Notes: Table 6 reports the Granger Causality test. The variables are total tax revenue (LTTR)and real sector output.(LGDPRSO) [*] Significant at 10%, [**] Significant at 5%, [***] Significant at 1%. ≠> implies does not Granger cause.

Prior to interpreting the Granger-causality test, it important to make a clarification on what the test does. The test does not provide an answer whether the movement of a variable can be ascribed to changes in other variable; rather it only explains that the movement of one variable is followed by another variable (Brooks 2008). F-tests for the null hypothesis that all of the lags of a given variable are jointly insignificant in a given equation are presented in Table 6. In this case, the study analyze the causal relationship between total tax revenue and real sector output. The results in Table 4.10 show that there is no evidence of causal relationship between total tax revenue and real sector output. Conversely, there is evidence of uni-directional causal relationship from real sector output to total revenue in Nigeria.

From this regression result, the real sector output, exchange rate and inflation rate had joint significant effect on total tax revenue. Furthermore, the aggregate real sector output and exchange rate had significant positive effect on total tax revenue while inflation rate had significant negative influence on tax revenue.

This position is supported by Moore (2013) in his attempt to identify the obstacles of tax revenue generation in developing countries. His study revealed that the structure of economies and low level income of these countries are responsible for their low tax revenue generation. Similar study of Khattry and Rao (2002) on a sample of 80 countries over a period covering 1970-98 also confirmed low GDP has been significant in explaining the decline of income tax revenues in low-income countries. Similary, Tosun and Abizadeh (2005) also examined the effect of economic growth on tax changes in OECD countries from 1980 to 1999 and discovered that economic growth measured by GDP has a significant positive effect on tax revenue. Navon and Brender (2010 and Joaquim (2013) also found existence of long-run relationship between GDP and tax-revenue and GDP in Israel and Eurozone countries respectively. The significant positive relationship between exchange rate and tax revenue is supported by the study of Ebrill (1999) on their investigation of tax revenue Africa between 1980 and 1995, Asia and the Western Hemisphere on the determinants of customs and excise duties. They find that exchange

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rate has significant negative effect on trade tax revenue. Similar study of Aloo (2012) showed that exchange rate has significant positive effect on tax revenue in Nigeria.

The findings of this study on the significant negative effect of inflation on tax revenue is in tandem with the findings of Agbeyegbe, Stotsky and Asegedech WoldeMariam (2004), who opined that inflation rate have significant negative relationship with tax revenues. In the contrary, WoldeMariam (1997), Ghura (1998), Stotsky and Punjab. Ovung, (2002), Eichengreen (1979), Stotsky and WoldeMariam (1997), GDP are of the opinion that inflation have significant positive impact on tax revenue. This study also revealed a unidirectional causality between real sector output and tax revenue in Nigeria. This result is supported by the study of Raed, Iriqat, Ahmad and Anabtawi (2016). Their study investigated the causality relationship between GDP and tax revenues in developing countries as a case study in Palestine during (1999-2014). They discovered that GDP Granger cause tax revenue, whereas tax revenues do not Granger cause GDP.

On theoretical ground, the findings from this study is in line with Keynesian theory, which state that the excess income generated in the economy should be removed from the system in order to attain fiscal balance. This implies, increase in real sector output should translate to more tax revenue.

5.   CONCLUSION AND RECOMMENDATION

This study concluded that real sector output enhanced tax revenue generation in Nigeria. It recommended that government should intensify effort on stimulating growth in the real sector of the economy in order to achieve sustainable increase in tax revenue. In addition, government's macroeconomic policies on inflation rate and exchange rate should be undertaken in a way to optimize tax revenue.

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Appendix 1: Tax Revenue, Inflation Rate, Exchange Rate and GDP Data for Nigeria (1981 -2017)

N	Yea	CIT	PPT	VAT	CED	TTR	GDPRSO	Inflati	Exc
		N'billio	N'billio	N'billio	N'billio	N'billio	N'billion	%	N/ US$
1	1981	0.40				9.05		20.9	
2	1982	0.55	4.84		2.34	7.73		7.7	
3	1983	0.56	3.75		1.98	6.29	13,512.83	23.2	0.72
4	1984	0.79	4.76		1.62	7.16	13,511.97	39.6	0.76
5	1985	1.00	6.71		2.18	9.90	14,698.92	5.5	
6	1986						14,934.88	5.4	
7	1987							10.2	
8	1988							38.3	
9	1989							40.9	
10	1990						18,520.24	7.5	
11	1991						18,382.25	13	
12	1992							44.5	
13	1993							57.2	
14	1994							57	
15	1995							72.8	
16	1996							29.3	
17	1997							8.5	
18	1998							10	
19	1999							6.6	
20	2000							6.9	
21	2001							18.9	
22	2002							12.9	
23	2003							14	
24	2004							15	
25	2005							17.9	
26	2006							8.5	
27	2007							5.4	
28	2008						44,263.40	15.1	
29	2009							13.9	
30	2010							11.8	
31	2011						56,116.35	10.3	
32	2012						58,241.99	12	
33	2013							8	
34	2014						65,170.12	8	
35	2015	1,268.98		767.33	546.20			9.6	
36	2016	933.54		828.20	548.80			18.55	
37	2017			972.35	628.00			15.37	305.79

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