Effect of Government Expenditure and Value Added Tax on Economic Growth in Nigeria

Abstract

The study seeks to examine the relationship between government expenditure and VAT on economic growth of Nigeria. Both the exploratory and ex-post facto designs were adopted in this study. The study population consist of 28 years period given the number of years the data was collected. Using a consensus sampling method, the 28 years are used as sample size. The study used the ordinary least square regression technique, specifically the Vector Autoregressive model for testing the hypotheses stated. The first findings revealed that, government expenditure has a positive insignificant effect on gross domestic product of Nigeria While, the second hypotheses tested revealed that, value added tax has a positive significant effect on gross domestic product of Nigeria. As a result, it is recommended that, government expenditure has not translated to the needed improvement in gross domestic product of Nigeria. This might be as a result of misappropriation of funds and corruption or the political will to supervise expenditure on development items. It is recommended that government to set in place financial discipline measures that regulates payment for contracts and other expenditure such that these funds allocated for development to spur GDP will be utilized. The government should either maintain the current VAT rates or increase the VAT rates. But they should ensure that social amenities are made available to cushion the effect of VAT increase for revenue generation purposes.

Keywords: VAT, Expenditure, GDP, Growth, Economy

1.1 Introduction

The economic history of both developed and developing countries reveals that taxation is an important weapon in the hands of government; not only for revenue generation, but also to achieve fiscal goals like influencing the direction of investment and timing in consumption of certain goods and services. The imposition of a tax is based on certain principles, as advocated by Adams Smith one of which is how effective as well as how equitable the tax concerned can be. This is due to the fact that a tax can be effective without being equitable and vice versa.

This impressive performance of VAT in virtually all countries where it has been introduced, according to Ajakaiye (1999, in Aruwa; 2008), clearly influenced the decision to introduce VAT in Nigeria in January 1994. According to the Federal Inland Revenue Service; (1993), VAT is a consumption tax that is relatively easy to administer and difficult to evade and it has been embraced by many countries world-wide. The adoption of Value Added Tax (VAT) as a form of tax in Nigeria through the VAT Act No 102 of 1993 marks an important landmark in tax reform in Nigeria. The VAT Decree led to the phasing out of the Sales Tax Decree of 1986. The decree came to being due to the outcome of the Dr. Sylvester Ugoh headed study group in November 1991. The group recommended that VAT should be introduced after two years of preparatory work. The decree spelt out the goods on which VAT can be collected (*VAT*able). Food items which were seen as non VATable are meant to be registered with the Federal Inland Revenue Service (FIRS), therefore guaranteeing the

payment of VAT on goods and services. The decree became applicable from 1st December, 1993 but by administrative agreement, invoicing for the purpose did not start until 1st January 1994. VAT was defined as a self-assessment tax that is paid when returns are being rendered i.e. it is an input-output mechanism that is self-policing. VAT was also seen as a tax levied on the purchase of goods and services with a return remitted to the FIRS at the end of the month. VAT is usually borne by final consumers though collected at each stage of production and distribution channel (Bhatia, 2008). The introduction of VAT in the Nigeria economy was a fight against one major problem of public finance; acquisition and allocation of funds by governmental units. The revenue generated from the oil sector and development of government revenue in the international market which were in arithmetic progression, are also reasons for the adoption of VAT. The Sales Tax in the country was narrowed down to some products such as cigarettes, mineral drinks, canned food, which necessitated the adoption of VAT. "VAT is a multistage tax system usually imposed on value added to goods and services and they flow through various phases of production and distribution including services offered" (Bhatia, 2008).

In 1995, Value Added Tax fetched a total of N20, 761,580,661. This is about 27.66% of Federal Government total tax revenue for the year. By all standards, it was a very commendable performance; the collection in 2003 was a great improvement to relative performance in 1994 of VAT which was only 12.4% of the total government revenue for the year. This improved performance maybe due to the productivity bank of 5% excess solution over targets promised all revenue agencies in the 1995 Budget speech. Government interested in the high and growing VAT fund generated via VAT because it encourages savings and investment which are principal elements of a healthy economy (Glenday, 2006). The trend, at which VAT in Nigeria is increasing the revenue base of the government is a healthy development because it shows a continuous growth in revenue. This is evident in the fact that, the 6% target of GNP during the first year of its inception was not only met, but exceeded by N135m on monthly basis in the period. Considering the predictability and reliability of revenue from this type of tax, currently the VAT rate is 7.5% and this has resulted to government increased revenue base.

VAT like other type of taxes has its drawbacks, which might have some effects on the growth of the economy of the country. This is because in a buoyant economy, a tax on consumption means reduced rate of inflation, through the mop up of excess purchasing power of the people. It can also be inflationary in the case of a depressed economy. The Nigeria case is an example of an economy in the former scenario. VAT could then be a fair measurement of economic growth since money in circulation increase with economic growth. If VAT is a revenue source to make more funds available to state for the provision of basic amenities and conducive environment for investment, then there exist a connection between VAT, government expenditure and economic growth. The Gross Domestic Product is a measure of National Income (NI) and output for a given nation within a given time frame in a given year. GDP does not measure exchange but production in a country. However, the proxy for economic growth for the purpose of this study is Gross Domestic Product (GDP).

1.2 Statement of the Problem

For any nation to advance economically and become self-reliant, there is the dire need for a government of such a nation to engage in some economic activities that have the capacity to

boost the morale of her citizenry and enhance their standard of living to engage in some activities that will boost the morale of its citizens and improve their standard of living, whereas the citizens on their own part remit taxes in support of government as part of their civic obligations. When the government has played effectively the role of providing basic infrastructure and amenities through the judicious use of tax payer's money, economic growth would be rapid. This paper therefore strives to objectively X-rays the effect of government expenditure and VAT on economic growth in Nigeria.

1.3 Objectives of the Study

The main objective of the study is to examine the relationship between government expenditure and VAT on economic growth of Nigeria. In specific terms, the objectives of the study are:

1. To examine the relationship between government expenditure and economic growth in Nigeria.
2. To examine the relationship between Value Added Tax (VAT) and economic growth in Nigeria.

1.4 Hypotheses

The following hypotheses are stated in null form below:

1. Government expenditure has no relationship between with economic growth of Nigeria.
2. Value Added Tax has no relationship with Nigerian economic growth.

Review of Related Literature

2.1 The Concept of Taxation and the Scope

Ezejelue and Ihendinihu (2006) defined "taxation as the demand made by the government of a country for a compulsory payment of money by the citizens of the country with the objectives of raising revenue to finance government expenditures, satisfy collective wants of the people and regulate economic and social policies. From the foregoing, it can be deduced that what makes tax payment compulsory by the citizens, groups and corporate bodies is because it has legal backings. It is a veritable instrument for the financing of government developmental objectives and because of its certainty and reliability objectives; it generates public funds for financing of government projects".

" In other words, the transferral of real economic resources from private sector to the public sector to finance public sector activities. It may be concluded from the foregoing that taxation is the transfer of financial resources from private economic agents like households and corporate bodies, to the public sector to finance the development of the society" [Ezejelue and Ihendinihu (2006)].

"Four key issues must be understood for taxation to play its functions in any society. First, a tax is a compulsory contribution made by the citizens to the government and this contribution is for general common use. Second, a tax imposes a general obligation on the tax payer. Third, there is a presumption that the contribution to the public revenue made by the tax payer may not be equivalent to the benefits received. Finally, a tax is not imposed on a citizen by the government because it has rendered specific services to him or his family" [Ezejelue and Ihendinihu (2006)].

"Individuals, group of individuals and corporate entities are expected to make this payment based on their income, profit or wealth of group person. A well-designed tax system

that functions effectively and efficiently can help developing countries governments prioritize their spending, put together stable institutions, and advance democratic accountability" [Ezejelue and Ihendinihu (2006)]. As observed by Ezejelue and Ihendinihu (2006), "the primary purpose of tax revenue include raising revenue to finance government expenditures, satisfy collective wants of the people and regulate economic and social policies".

2.2 Value Added Tax: This is an indirect tax on consumption of goods and services excluding taxes that are zero rated such as exports. VAT is imposed at each stage in the production chain of production and distribution from raw materials to the finale sale based on the value (price) added at each stage. It shares similarities with the sales tax charged on retail and wholesale levels together with private final consumption.

2.3 The Nature of the Nigerian Economy: The main, secondary, and tertiary sectors of the Nigerian economy are agriculture and natural resources, processing and manufacturing, and services. The agricultural and petroleum sectors make up the majority of the economy. Agriculture, which at the time was the largest source of income, was the main source of income in the 1960s and the early 1970s, and from the late 1970s till the present, the oil industry has taken over. Agriculture, according to Apata et al. (2011), was the main economic activity back then, with mining and manufacturing following closely behind at very low development levels.

Beginning in the early 1970s, Nigeria's revenue from the sale of crude oil unexpectedly increased significantly. According to Ezirim et al. (2010), the country's service industry experienced rapid expansion as a result of the sudden wealth brought on by crude oil investments, notably in the major centres. Young men and women moved from the hinterland to the urban cities as a result of investments made in socioeconomic infrastructure, which boosted the oil-driven urban economy. The agriculture industry was completely destroyed by this broad-based movement as oil became Nigeria's main source of income. In isolated settlements, the elderly were put in charge of agriculture and agricultural business operations.

More social and economic stagnation was brought about by both the protracted military rule and the democratic civilian government in Nigeria for more than 50 years. These regimes have persisted in mismanaging and appropriating Nigeria's common wealth, which has led to the nation's low standard of living, poverty, inadequate infrastructure, and low ranking in the Human Development Index (HDI). Although there are claims that the current and previous civilian governments have made some economic progress in terms of growth in Gross Domestic Product (GDP), the poverty rate is high and has even increased, the unemployment situation is getting worse, the infrastructure is poor, and there are frequent ethnic and religious conflicts. Nigeria is currently attempting to develop its banking, telecommunications, entertainment, and technology industries, all of which are assisting in the expansion of her Gross Domestic Product GDP. Lack of essential infrastructure, insufficient power supply, and the general decline in oil prices, which has led to a sharp decline in the country's overall revenue, are some obstacles to the fast economic development of the nation (Ofoegbu, Akwu and Oliver, 2016).

2.4 Economic Growth Described: A rise in a nation's output of goods and services is referred to as economic growth. Metrics such as GDP is frequently utilized because economic growth evaluates the worth of things being produced rather than just the quantity. Gains in total

production typically correspond with increases in marginal productivity from each resident, which raises average incomes, boosts consumer spending, and raises living standards. In an economy, there are four main ways to boost productivity and they are increasing workers human capital, or their level of expertise and specialization; technological advancements that increase efficiency. Enhancing the availability of "capital commodities," also known as "physical capital," in both quantity and quality and increasing the size of the workforce as a whole. Although the overall productivity might rise, raising the population may have the opposite impact on locals' standards of living. The Industrial Revolution is a historically noteworthy example of improvements in each of the four production variables, which together are what fuel economic expansion. Automation of factory assembly allowed workers to move into higher-skilled, more specialized positions, and further advancing technology. Improved technology and skilled labour increased the amount of capital goods accessible, which increased productivity. They also put an end to periodic famines, which expanded population. The expansion of the labour force, advancements in technology, enhanced tool utility, and advances in education and skill levels are the four main causes behind economic growth.

2.5 Theoretical Framework

Cost of Service Theory: The benefits received hypothesis and the cost of service theory are complementary theories. It places more emphasis on the state's and residents' somewhat commercial connection. According to this theory, the state is being asked to renounce its traditional duties of protection and welfare. This idea proposes a balanced budget policy because it is to meticulously recoup the cost of the services (Ogbonna and Ebimobowei, 2012). This study believes this theory to be appropriate and relies on it since it emphasizes the government's responsibility for security and welfare functions as well as the responsibility that citizens have toward the government.

2.6 Review of Empirical Studies

According to Ajakaiye (1999, in Aruwa; 2008), the decision to adopt VAT in Nigeria in January 1994 was undoubtedly influenced by the VAT's remarkable performance in nearly all nations where it has been implemented. The VAT is a consumption tax that has been adopted by numerous nations around the world, according to the Federal Inland Revenue Service (1993). It is also relatively simple to administer and difficult to dodge. A significant turning point in Nigeria's tax reform was the implementation of Value Added Tax (VAT) as a tax by the VAT Act No. 102 of 1993. The 1986 Sales Tax Decree was phased out in response to the VAT Decree. The conclusion of the study committee led by Dr. Sylvester Ugoh in November 1991 led to the creation of the ordinance. The group proposed that, after two years of planning, VAT should be implemented. The decree specified the items that are subject to VAT collection. Food products that were previously considered not to be subject to VAT are now required to register with the Federal Inland Revenue Service (FIRS), assuring the payment of VAT on both commodities and services. Later, on December 1, 1993, the decree went into effect, but due to an administrative agreement, billing for the purpose did not begin until January 1, 1994. VAT is described as a self-assessment tax that is paid at the time returns are filed, meaning it is an input-output process that self-regulates. A return for the VAT was sent to the FIRS at the end of the month and was considered as a levy imposed on the purchase of goods and services. A tax on the supply of goods and services called VAT is ultimately paid by the final customer but is nevertheless collected. The implementation of VAT in the Nigerian economy was a response to one of the main issues

with public finance: the collection and distribution of funds by governmental entities. The growth of government revenue on the global market and the revenue from the oil industry, both of which were increasing numerically, are additional justifications for the implementation of VAT. The country's sales tax was restricted to a few items, including cigarettes, mineral water, and canned food, which made the implementation of VAT necessary. The value added to goods and services as they move through the various stages of manufacturing and distribution, as well as to services as they are rendered, is subject to a multistage tax system called VAT (Bhatia, 2008). VAT generated a total of N20, 761,580,661 in 1995. This amounts to around 27.66% of the federal government's annual tax collection. By all measures, it was a very remarkable performance; the 2003 collection represented a significant improvement over the 1994 performance of the VAT, which accounted for only 12.4% of the entire government's annual revenue. The productivity bank of 5% surplus solution over targets that was promised to all revenue agencies in the 1995 Budget Speech may be responsible for this better performance. However, the large and rising VAT revenue flow may make the government happy because, according to the tax's supporters, it promotes investment and saving, which are crucial components of a strong economy (Glenday, 2006). Because it demonstrates a consistent increase in revenue, the trend of how Nigeria's VAT is expanding the government's revenue base is highly encouraging. This is demonstrated by the fact that the GNP's 6% goal for the first year of its existence was not only accomplished, but also exceeded by N135m per month at that time. Given the regularity and dependability of the money generated by this sort of tax, the government has strengthened its revenue base by setting the VAT rate at 7.5% at present.

Methodology

3.1 Research Design

This study uses ex-post facto and exploratory designs. The exploratory design will aid the researcher in gathering relevant resources from multiple sources, including textbooks and journal articles. Ex-post facto designs are chosen because they do not give the study the opportunity to significantly affect or control the variables because they have already happened and cannot be changed.

3.2 Method and sources of data

The study mostly made use of secondary sources for its data. Time series information is gathered using the desk survey method from the Federal Inland Revenue Services (FIRS), World Bank, United Nations Development Programme (UNDP), Central Bank of Nigeria (CBN) statistical bulletin, journals, textbooks, and other pertinent private and public publications. From 1994 through 2021, the study's time frame was covered.

3.3 Techniques of Data Analysis

Ordinary Least Squares (OLS) regression technique will be used in analysing data gathered having established the relationship between dependent and independent variables. Econometric approach will be used in estimating the relationship between taxation and economic growth. This regression technique has been employed in previous studies such as Okafor (2012) and was found suitable owing to its distinctive properties of linearity, efficiency, sufficiency, least variances, unbiasedness and least mean errors.

3.4 Model Specification

The functional relationship between tax revenue and the economic growth of Nigeria is expressed as shown below:

GDP = F (VAT) ---------- 1

GDP = F (GEP) ---------- 2

Obtaining the OLS model from the above expression thus:

GDP = $\alpha+\beta 1$VAT+ € ---------- 3

GDP = $\alpha+\beta 1$GEP+ € ---------- 4

Where:

GDP = Gross Domestic Product

VAT = Value Added Tax

GEP = Government Expenditure

€ = Error term

4.1 Data Presentation and Analysis

This section analyzes the data extracted from the FIRS and the CBN statistical bulletin for each of the variable used in this study. The data used were obtained for 28 years (1995-2021). The data were analyzed with the aid of Stata 13. The analysis of data is presented in the subsequent below:

4.2 Descriptive Statistics

The descriptive statistics for both the dependent and independent variables are presented in table 1 below:

Table 1: Descriptive Statistic Table

Variable	Obs.	Min	Max	Mean	Std. Dev.	Skew.
GEX	28	2.84578	6.659662	5.102988	1.30609	0.0571
GDP	28	5.434854	11.80972	8.593989	2.402879	0.2669
VAT	28	3.860984	6.659662	5.404539	.7003355	0.5053

Source: Stata 13

Table 1 presents the descriptive statistics of all the variables. The number of observations for the study is 28. From the table above, the following information is distilled.

The result reveals that, Government Expenditure (GEX) reflects a mean of 5.102988 with a deviation of 1.30609. GEX also reveal a maximum value of 6.659662 and a minimum value of 2.84578. Gross Domestic Product (GDP) reveals a mean of 8.593989 with a deviation of 2.402879. GDP further reveals maximum and minimum values of 11.80972 and 5.434854 respectively. Value Added Tax (VAT) has a mean of 5.404539 with a deviation of 0.7003355. Furthermore, VAT records a maximum and minimum value of 6.659662 and 3.860984.

To test for normality of data, the skewness statistics is used. For GEX, the data set reveal a skewness value of 0.0571, while data for GDP and VAT reveal skewness values of 0.2669 and 0.5053 respectively. This means the data values are normally skewed within the stipulated region of -2 and +2. The result of the descriptive statistics in respect to the study

variables shows the level of fluctuation that occurs as a result of economic uncertainties, as well as change in government policies. This is noted in the respective deviation values of the variables.

4.2.2 Stationarity Test

To ensure that the results are robust, several diagnostic tests are conducted to enhance the validity of data and model specified for analyses. As such, data diagnostic test such as; the Unit root test and the Co-integration test are computed.

4.2.2.1 Unit root

The variables used in this study must be mean reverting, or stationary, in order to prevent conducting an erroneous regression, hence the unit root test is used to confirm this. To check whether the data are stationary, the Augmented Dickey Fuller (ADF) test is used. The table below presents the test's results.

Table 2: Unit root result

Variable	Test Stat.	5% Critical Value	Difference
GEX	-3.459	-1.950	1st
GDP	-3.403	-1.950	1st
VAT	-3.061	-1.950	Level

Null: There is serial Unit Root in the data

Source: Stata output in appendix i

The results of the first test necessary to determine the stationarity of the variables are displayed in the table above. The Augmented Dickey-Fuller (ADF) unit root test is used to determine individual stationarity. The amount of individual stationarities of the time-series data is determined using the Test Statistic assessed against the crucial value and the ADF unit root test result for individual stationarity. The above result demonstrates that all of the variable data were stationary at the first difference (ADF) with Test Statistics> crucial values, with the exception of the variable data for VAT, which is stationary at level. A cointegration test must be performed to determine whether the variables in the data set are mean reverting over the long term since they are independently stationary at level and first difference order.

4.2.2.2 Co-integration Test

H_0: There is no co-integration

Table 3: Co-integration result

Statistic	Rank 0	Lag 1	Lag 2	Lag 3
Trace Stat.	14.6919	6.1905	0.6950*	*
Critical Value	29.68	15.41	3.76	*
Decision	-	-	-	-

Source: Stata output in appendix i

The table above reveal the result of Johansen co-integration test for the time-series data. To ensure the level of cointegration of the data set, the trace statistics values listed in the table above is considered against their respective critical values to ensure a more robust test for cointegration; it is expected that the Ranked trace statistics>critical values.

From the Rank (0) order result, the trace statistics of 14.6919<29.68 critical value; it means there is no cointegration at ranked level. Also, the result discloses no cointegration at Lag-1 with trace statistics of 6.1905 against a critical value of 15.41. Also, the result for Lag-2 reveals trace statistics of 0.6950 which is less than (<) 3.76 critical value. This means there is no cointegration if the data is lagged for 2 series. Though the study is restricted to Lag-1 decisions given the lag selection criteria of 1 in appendix ii of the study, it also means there is need to compare both the VAR and VECM models in analysing the data for this study.

With the interpretation above, there is need to interpret both the Vector Autoregressive (VAR) and Vector Error Correction Model (VECM) to ensure a more robust interpretive outcome that will address the short run shocks concerns noted cases of Rank (0), Lag-1 and Lag-2 since the Lag deterministic result give rise to lag-1 model in appendix ii.

4.2.3 Regression of the Estimated Model Summary

This section of the chapter presents the results produced by the error correction model summaries for further analysis.

Table 4: VECM/ VAR

Long run equilibrium	Coefficient (VECM)		Short run equilibrium	Coefficient (VAR)
GDP (-1)	1.000		GDP (-1)	0.730518
GEX (-1)	0.956706		GEX (-1)	0.0990242
VAT (-1)	-4.71287		VAT (-1)	0.9179028
Lag Selection	1	Prob.	0.0018	

Source: Stata Output in appendix i

Table 4 above presents result of the VAR and VECM for the study model, to test for long run and short run shocks correction as a result of non-co-integration of the data set for Lag-1 and Lag-2 model 1 above. The various coefficient values of the short run equilibrium (VAR) are compared against the long run equilibrium (VECM) to ascertain the level of bounce backs in addressing non-long run co-integration issues of the model.

After 1st differences, the adjustment coefficient value of 0.730518 shows that, the previous period deviation from long run equilibrium is corrected in the short run at an adjustment increased speed of 0.730518. For GEX coefficient, a unit change in GEX is associated with 0.0990242 unit increase in GDP in the short run *Ceteris Paribus* against the long run coefficient of 0.956706. For VAT coefficient, a unit change in VAT is associated with 0.9179028 unit increase in GDP in the short run *Ceteris Paribus* against the long run coefficient of -4.71287.

The VECM Lag-range multiplier test for autocorrelation reveals value of 0.18018. This shows that the set of data after error correction has no presence of autocorrelation, as such, further VAR analysis is permitted.

Table 5: GDP VAR Regression

VAR Variable	Coefficient	R-Square	Constant	Prob.
GDP		0.8846	-2.880798	0.00000
GEX	.0990242			0.499
VAT	.9179028			0.055
Lagrange (1)	Probability	0.36855		

Source: Stata output in appendix i

For model fitness, the R^2 value is used to establish the level of overall fluctuation the study independent variables (GEX & VAT) can cause GDP as the dependent variables to change.
The R-square values of 0.8846 shows that GEX and VAT cause GDP to fluctuate at approximately 88%; this means that 12% fluctuation of Nigeria's GDP is caused by other factors not considered in this study like; corruption and FDI.
The constant value of -2.880798 for the model revealed that, given intercept only models, the GDP value of Nigeria will decrease by 2.880798 units. But a unit change in GEX will cause GDP to increase by 0.9% and a unit change in VAT will cause GDP to increase by 91.7%. The lag-range multiplier value of 0.36855 shows there is no issue of autocorrelation.

4.3 Test of hypotheses

Ho_1: Government expenditure has no significant effect on gross domestic product of Nigeria.

To test the significance of the variables, the decision rule stated in chapter 3 is used. Since the calculated probability (Prob) value for GEX against GDP (0.499) is greater than the accepted probability value of 0.05. The null hypothesis is accepted and the alternative rejected. Thus, government expenditure has no significant effect on gross domestic product of Nigeria.

Ho_2: Value added tax has no significant effect on gross domestic product of Nigeria.

To test the significance of the variables, the decision rule stated in chapter 3 is used. Since the calculated probability (Prob) value for VAT against GDP (0.05) is equal to the accepted probability value of 0.05. The null hypothesis is rejected and the alternative accepted. Thus, value added tax has a significant effect on gross domestic product of Nigeria.

4.4 Discussion and Interpretation of Results

Two research objectives were established to ascertain the effect of government expenditure and value added tax on GDP of Nigeria. The outcome of the test of the hypotheses tested showed that government expenditure has no significant effect on GDP of Nigeria while VAT has a significant effect on GDP of Nigeria. The study findings are in line with Ihenyen and Mieseigha (2014) who studied taxation as a tool of economic growth in Nigeria applying annual time series data obtained from the Central Bank of Nigeria (CBN) Statistical Bulletin from 1980 through 2013 while adopting Ordinary Least Square (OLS) technique for data analysis.

Summary, Conclusion and Recommendation

5.1 Summary of Findings

Government expenditure has a positive association with gross domestic product of Nigeria. Nonetheless government expenditure has no significant effect on gross GDP of Nigeria. Value VAT has a positive relationship with the gross domestic product of Nigeria. Again, VAT has a significant impact on GDP of Nigeria.

5.2 Conclusions

Government expenditure has a positive insignificant effect on gross domestic product of Nigeria. Value added tax has a positive significant effect on gross domestic product of Nigeria.

5.3 Recommendations

In consonance with this study's findings, the following recommendations become imperative: Government expenditure has not translated to the needed improvement in gross domestic product of Nigeria. This might be as a result of misappropriation of funds and corruption or the political will to supervise expenditure on development items. It is recommended that government to set in place financial discipline measures that regulates payment for contracts and other expenditure such that these funds allocated for development to spur GDP will be utilized. The government should either maintain the current VAT rates or increase the VAT rates. But they should ensure that social amenities are made available to cushion the effect of VAT increase for revenue generation purposes.

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Appendix i

Notes:

.> , sheet("Sheet1") firstrow

. tsset Year, yearly
time variable: Year, 1994 to 2021
delta: 1 year

. dfuller GDP, noconstant lags(1)

Augmented Dickey-Fuller test for unit root Number of obs = 26

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
		---------- Interpolated Dickey-Fuller ---------		
Z(t)	1.094	-2.658	-1.950	-1.600

. dfuller GDP, trend lags(1)

Augmented Dickey-Fuller test for unit root Number of obs = 26

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
		---------- Interpolated Dickey-Fuller ---------		
Z(t)	-2.361	-4.371	-3.596	-3.238

MacKinnon approximate p-value for Z(t) = 0.4007

. generate NGDP=d.GDP
(1 missing value generated)

. dfuller NGDP, noconstant trend lags(1)
cannot choose trend if constant is excluded
r(198);

. dfuller NGDP, noconstant lags(1)

Augmented Dickey-Fuller test for unit root Number of obs = 25

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
		---------- Interpolated Dickey-Fuller ---------		
Z(t)	-3.403	-2.660	-1.950	-1.600

. dfuller GEX, noconstant lags(1)

Augmented Dickey-Fuller test for unit root Number of obs = 26

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
		---------- Interpolated Dickey-Fuller ---------		
Z(t)	0.020	-2.658	-1.950	-1.600

. dfuller GEX, trend lags(1)

Augmented Dickey-Fuller test for unit root Number of obs = 26

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
		---------- Interpolated Dickey-Fuller ---------		

```
 Z(t)          -1.938          -4.371          -3.596          -3.238
------------------------------------------------------------------------------
MacKinnon approximate p-value for Z(t) = 0.6349

. generate NGEX=d.GEX
(1 missing value generated)

. dfuller NGEX, noconstant lags(1)

Augmented Dickey-Fuller test for unit root         Number of obs   =        25

                     ---------- Interpolated Dickey-Fuller ---------
                  Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value             Value
------------------------------------------------------------------------------
 Z(t)          -3.459          -2.660          -1.950          -1.600

. dfuller VAT, noconstant lags(1)

Augmented Dickey-Fuller test for unit root         Number of obs   =        26

                     ---------- Interpolated Dickey-Fuller ---------
                  Test         1% Critical       5% Critical      10% Critical
               Statistic           Value             Value             Value
------------------------------------------------------------------------------
 Z(t)           3.061          -2.658          -1.950          -1.600

. varsoc GDP GEX VAT

   Selection-order criteria
   Sample:  1998 - 2021                        Number of obs      =        24
  +---------------------------------------------------------------------------+
  |lag |    LL      LR      df    p      FPE       AIC      HQIC      SBIC    |
  |----+----------------------------------------------------------------------|
  |  0 | -93.6335                     .630846   8.05279   8.09186   8.20005  |
  |  1 | -25.3544  136.56    9  0.000  .004556*  3.11287   3.26914*   3.7019* |
  |  2 | -18.1691  14.371    9  0.110  .005532   3.26409   3.53756   4.29489  |
  |  3 | -12.7277  10.883    9  0.284  .008304   3.56065   3.95132   5.03321  |
  |  4 |  2.23661  29.929*   9  0.000   .00634   3.06362*  3.57149   4.97795  |
  +---------------------------------------------------------------------------+
   Endogenous:  GDP GEX VAT
    Exogenous:  _cons

. vecrank GDP  VAT GEX, trend(constant) lags(1)

                       Johansen tests for cointegration
Trend: constant                                         Number of obs =      27
Sample:  1995 - 2021                                             Lags =       1
-------------------------------------------------------------------------------
                                                         5%
maximum                                      trace    critical
  rank    parms       LL        eigenvalue  statistic    value
    0       3     -41.626395         .       14.6919*   29.68
    1       8     -37.375702     0.27011      6.1905    15.41
    2      11     -34.627946     0.18416      0.6950     3.76
```

```
   3     12    -34.280464    0.02541
-------------------------------------------------------------------------------

. vecrank GDP  VAT GEX, trend(constant) lags(1) max

                   Johansen tests for cointegration
Trend: constant                              Number of obs =      27
Sample:  1995 - 2021                                  Lags =       1
-------------------------------------------------------------------------------
                                                        5%
maximum                                      trace    critical
  rank    parms      LL      eigenvalue  statistic    value
   0      3     -41.626395          .     14.6919*   29.68
   1      8     -37.375702    0.27011      6.1905    15.41
   2     11     -34.627946    0.18416      0.6950     3.76
   3     12     -34.280464    0.02541
-------------------------------------------------------------------------------
                                                        5%
maximum                                        max     critical
  rank    parms      LL      eigenvalue  statistic    value
   0      3     -41.626395          .      8.5014    20.97
   1      8     -37.375702    0.27011      5.4955    14.07
   2     11     -34.627946    0.18416      0.6950     3.76
   3     12     -34.280464    0.02541
-------------------------------------------------------------------------------

. var GDP, lags(1/2) exog(GEX VAT)

Vector autoregression

Sample:  1996 - 2021                         No. of obs       =        26
Log likelihood = -30.95421                      AIC             =  2.765708
FPE            =  .9348966                   HQIC            =  2.835379
Det(Sigma_ml)  =  .6333171                      SBIC            =   3.00765

Equation           Parms    RMSE     R-sq      chi2     P>chi2
----------------------------------------------------------------
GDP                  5     .885498   0.8846   199.2756   0.0000
----------------------------------------------------------------

------------------------------------------------------------------------------
         GDP |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
GDP          |
         GDP |
         L1. |    .730518    .191968     3.81   0.000     .3542675    1.106768
         L2. |  -.0184863   .1941414    -0.10   0.924    -.3989964    .3620239
             |
         GEX |   .0990242   .1466032     0.68   0.499    -.1883127    .3863612
         VAT |   .9179028   .4786641     1.92   0.055    -.0202615    1.856067
       _cons |  -2.880798   1.823573    -1.58   0.114    -6.454936    .6933403
------------------------------------------------------------------------------

. vec GDP GEX VAT, trend(constant) lags(1)
```

Vector error-correction model

Sample: 1995 - 2021 No. of obs = 27
AIC = 3.361163
Log likelihood = -37.3757 HQIC = 3.475332
Det(Sigma_ml) = .0031985 SBIC = 3.745115

Equation	Parms	RMSE	R-sq	chi2	P>chi2
D_GDP	2	.847294	0.1549	4.581948	0.1012
D_GEX	2	.787308	0.0434	1.133543	0.5674
D_VAT	2	.098947	0.5664	32.65783	0.0000

	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
D_GDP						
_ce1						
L1.	-.1558418	.0928971	-1.68	0.093	-.3379168	.0262331
_cons	.0399021	.1941863	0.21	0.837	-.3406961	.4205003
D_GEX						
_ce1						
L1.	-.0866379	.0863202	-1.00	0.316	-.2558225	.0825466
_cons	-.0445233	.1804385	-0.25	0.805	-.3981762	.3091297
D_VAT						
_ce1						
L1.	.0188759	.0108485	1.74	0.082	-.0023868	.0401386
_cons	.1250807	.022677	5.52	0.000	.0806345	.1695269

Cointegrating equations

Equation	Parms	chi2	P>chi2
_ce1	2	27.87123	0.0000

Identification: beta is exactly identified

Johansen normalization restriction imposed

beta	Coef.	Std. Err.	z	P>|z|	[95% Conf. Interval]	
_ce1						
GDP	1	.	.	.	.	.
GEX	.0956706	.4905985	0.20	0.845	-.8658848	1.057226
VAT	-4.71287	.9501681	-4.96	0.000	-6.575166	-2.850575
_cons	15.15913	.	.	.	.	.

.
. varlmar, mlag(1)
veclmar, mlag(1)
veclmar, mlag(1)

Lagrange-multiplier test

lag	chi2	df	Prob > chi2
1	12.6280	9	0.18018

H0: no autocorrelation at lag order

Lagrange-multiplier test

lag	chi2	df	Prob > chi2
1	9.7805	9	0.36855

H0: no autocorrelation at lag order

. varnorm, jbera skewness kurtosis

Jarque-Bera test

Equation	chi2	df	Prob > chi2
GDP	70.281	2	0.00000
VAT	6.223	2	0.04452
GEX	63.059	2	0.00000
ALL	139.563	6	0.00000

Skewness test

Equation	Skewness	chi2	df	Prob > chi2
GDP	2.0229	18.415	1	0.00002
VAT	.88446	3.520	1	0.06063
GEX	-1.2897	7.485	1	0.00622
ALL		29.420	3	0.00000

Kurtosis test

Equation	Kurtosis	chi2	df	Prob > chi2
GDP	9.7899	51.866	1	0.00000
VAT	4.5501	2.703	1	0.10014
GEX	10.028	55.574	1	0.00000
ALL		110.143	3	0.00000

. varwle

Equation: GDP

lag	chi2	df	Prob > chi2
1	222.8475	3	0.000

Equation: VAT

lag	chi2	df	Prob > chi2
1	1184.618	3	0.000

Equation: GEX

lag	chi2	df	Prob > chi2
1	62.53595	3	0.000

Equation: All

lag	chi2	df	Prob > chi2
1	1416.326	9	0.000

.
summarize GEX GDP VAT

Variable	Obs	Mean	Std. Dev.	Min	Max
GEX	28	5.102988	1.30609	2.84578	6.659662
GDP	28	8.593989	2.402879	5.434854	11.80972
VAT	28	5.404539	.7003355	3.860984	6.659662

. sktest GDP GEX VAT

Skewness/Kurtosis tests for Normality

			------- joint ------		
Variable	Obs	Pr(Skewness)	Pr(Kurtosis)	adj chi2(2)	Prob>chi2
GDP	28	0.2669	0.0000	16.38	0.0003
GEX	28	0.0571	0.0729	6.28	0.0434
VAT	28	0.5053	0.6110	0.74	0.6909