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INVESTIGATING THE RELATIONSHIP BETWEEN VAT AND GDP IN NIGERIAN ECONOMY

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ABSTRACT

This study is an empirical investigation into the relationship between Value Added Tax (VAT) and Gross Domestic Product (GDP) in Nigeria. This research is significant for planning and policy formulation as regards revenue generation. A data based on VAT revenue figure and GDP figure from 1994 to 2008 obtained from Central Bank of Nigeria's statistical bulletin, 2008 was collected and used. GDP and VAT figures for the period of study are tested for correlation. The test revealed a strong Pearson's Product Moment Correlation (PPMC) at about 96 per cent strength. Further, a test of significance confirmed that VAT revenue is significantly different at 99 percent confidence level in relation to GDP. This implies that VAT is not effective as revenue earner, in the sense that significant parts of GDP which represent aggregate national income as well as aggregate national expenditure are not collected as tax. Therefore, the recommendation by this study includes maintenance of the status quo as it could suggest support to the economy and convenience principles of taxation.

Key words: Investigating, VAT, GDP, Nigeria.

INTRODUCTION

It is important to look into how Value Added Tax (VAT) generates revenue for the Nigerian economy fifteen years after introduction (1994 - 2008) as Nigerian state is in dare need of revenue base diversification. Keen and Lockwood (2006) confirmed that VAT is a money machine, particularly in OECD member nations on which the study was based. Money machine suggests that VAT effectively generates revenue. Relationships that were considered in the study referred to included VAT and GDP, so also was Lin (2004), on evaluating the VAT in china suggested a relationship between VAT and GDP exists. Economic expert (Fitch, 2010) recently made an opinion on the state of Nigerian economy regarding sovereign credit rating of country that suggests a downgrade of the state of the economy from stable to negative one. To meet the persistent short fall in federation account, the report said, government has turned to the international market for borrowing. More than five billion US dollars of foreign debt were taken in the year 2010, doubling the current debt level; this, as reported, is apart from a US$500 million international bond that is to be launched before the end of the year 2010. Atojoko (2010) confirmed that, within 18 months, the country's debt portfolio has risen from US$18.45 billion at the beginning of 2009 to US$29.6 billion by June 2010; this is not a healthy economic situation. Further, the report confirms that all levels of government have turned to the borrowing business, which makes it relevant for the study as the scheme is designed for the benefit of the states and local governments. Bearing in mind that Nigeria has not been so long released from Paris Club debts (in 2005), returning to borrowing, by any tier of the government should be with a causion.

The Central Bank of Nigeria (2008) states that Nigeria's Gross Domestic Product (GDP) by expenditure is based on expenditure at purchase price including free on board values of exports of goods and services less the free on board value of import of goods and services. According to Anyanwuocha (2004), GDP refers to the total value of all goods and services produced in a country within a period of one year, by all the residents of the country irrespective of their nationality. Jhingan (2003) opines that GDP is the total measure of the flow of goods and services at a market value resulting from current production in a course of a year by all residents of a country. The Central Bank of Nigeria (2008), on its parts states that GDP as a concept is calculated without the deduction of the value of depreciation, and define GDP as the monetary value of goods and services produced in the country in a period of time regardless of nationality of the producers. VAT revenue is generated for distribution to the state and local government in Nigeria, unlike the oil revenues whose market government has no control over. This helps to reduce overdependence on oil revenue; this assures a sustainable economic growth and development.

This research report is an effort towards enhancing diversification of Nigeria's revenue base. GDP measured in expenditure could reveal a strong and significantly positive relationship with VAT, which is a tax on consumption expenditure. This refers to the aggregate expenditure on goods and services during one year in a country. These include private consumption expenditure, gross domestic private investments, net foreign investment, and government expenditure on goods and services. Under this index, there is particularly a problem for economies which move from production economies to a service economy, because to determine accurate value of a service is usually difficult. Consider services to self, for instance. Expenditure method of GDP measure is mathematically expressed as the sum of private consumption expenditure (C) + gross domestic private investment (I) + net foreign investment (X-M) + government expenditure on goods and services (G). Thus, aggregate national expenditure (NE) = C + I + (X-M) + G. Frank and Bernanke further concurred that expenditure method of measuring GDP assumes that goods and services produced in an economy are all purchased by economic agents, who are householders, firms, government and foreign sector. Total spending by these economic agents equals the market value of goods and services produced in the economy for the given period. Some of these goods and services are VAT registered, which informs this study. The question is how much of the expenditures becomes VAT revenue? Nation building is the responsibility of citizens. If citizens have such responsibility they would have no problem taking from personal resources to be sacrificed for the purpose, particularly, in a developing economy as Nigeria. VAT is a form of taxation that can be described as polite, in that it is paid unnoticed by the consumer. Without expenditure by all forms of consumers, whether they are government establishments, institutions and/or individuals there would not be VAT revenue. This goes to show, how much of Nigeria's resources measured in financial terms was available for public use. This is hoped to serve as a guide for economic planning, policy formulation and implementation.

To the knowledge of the researcher, there is no literary work assessing the correlation between VAT and GDP (national expenditure), and whether that is significant or not in Nigerian. The study based on empirical data, by this means assesses VAT's reliability as an effective revenue generation device for the nation's public use. VAT being a tax on expenditure. The can be seen as promoting the principle of 'ability to pay' in taxation, as the tax system is considerate of national income. The broad objective of the study is to establish the relationship between VAT and GDP in Nigeria.

MATERIALS AND METHOD

The study is restricted to the related enactment (tax on expenditure) of VAT Decree 102 of 1993, which entrenched into the Nigerian tax system, a scheme of tax known as value added tax simply referred to as VAT. The study is also limited to the data set of VAT revenue and GDP figures of the periods 1994 to 2008 for the analysis. The analysis is particularly aimed at confirming the viability of VAT as an effective revenue generation device in the economy. The technique of analysis adopted is Pearson's Product Moment Correlation Coefficient analysis (PPMC) between VAT and GDP (measured as aggregate national expenditure of Nigeria), and Student't' test. The test is whether VAT proceeds to the date have no correlation to GDP and how significant is the effect? The relationship between national expenditure and VAT is hereby determined by PPMC i.e. the determination of the correlation between VAT and national expenditure and it effect. To accomplish this work, the research answers the question, is there correlation between VAT and GDP in Nigeria, and if so, how significant? The null hypothesis to confirm the result of this research is stated thus, VAT has no significant correlation with GDP, and VAT has no significant effect on GDP (aggregate national expenditure) in Nigeria. Statistical Package for Social Sciences (SPSS) was used for the analysis.

DATA ANALYSES AND INTERPRETATION

The data generated are hereby analyzed (see Appendix). The data are VAT figures from the inception of the scheme in 1994 to 2008. This is considered adequate in the sense that fifteen years out of 18 years of its operation is taken for the study. The same series is applied to GDP figure i.e. from 1994 to 2008 to avoid discrepancies. It can be seen that the figures, for both, revealed steady growth with the increase in years. Central Bank of Nigeria confirmed that on average, the GDP is growing at 7per cent. Astronomical growth, particularly, towards the later years of the study can be observed with VAT. The hypothesis states that VAT revenue has no significant effect on the national expenditure (measured in real GDP) and has no correlation with GDP. The national expenditure is expected to correlate to VAT revenue since it is a tax on consumption. Incomes of economic agents in the economy are assumed, in this regard, to be used to buy goods and services produced in the economy. This is expected to accrue to VAT depending on whether the goods and services bought are VAT chargeable or not. The Nigerian case may be different given that there are a lot of exemptions by product and services like medical products and services, agricultural related transactions, and children's goods among others. VAT revenue from these would have much if they were charged.

RESULT

Results from the Table 1 reveal a positive strong correlation (96 per cent) between national expenditure (measured in GDP) and VAT, which is a tax on consumption. Further, the coefficient of determination (measured by square of correlation coefficient (r^2)) determining the variation between known and unknown factors which affect the variables is about 0.96^2 = 0.9216 translated to 92 per cent. This implies that about 92 per cent of the variation in VAT is affected by national income through the expenditure of the residents and that only about 18 per cent of the variation in VAT is due to other factors. The question whether or not VAT revenue is correlated to GDP is confirmed by this test that there is a strong positive correlation between them. However, Nigeria is one of the countries that have smallest (5 per cent) VAT rate charged in various economies around the world. Nigeria's case might have been complicated by poor economy. How significant is the VAT revenue in relation to the GDP (in aggregate expenditure)? Is the next question to answer? VAT is set as dependent variable while GDP is set as independent. This is determine by Student't' test from SPSS version 14.1 and presented thus, 't' test tests the significance of a variable in relation to another. In this case VAT revenue significance in relation to GDP is the test. The result of 't' test goes thus; $t^* < -t_{0.025}$ or $t^* > t_{0.025}$ represent the critical region. The observed value of t = 11.800 from Table II, the tabular/theoretical t = 2.145. The decision rule is, if t* (calculated) value fall outside the critical region ($-2.145 < t^* < 2.145$), the null hypothesis is rejected. As it is now observed from the test, the value of 't*' falls outside the critical region. So, the null hypothesis is hereby rejected, implying that VAT is significantly different in relation to GDP in Nigeria at 1 per cent level of significance and 99 per cent confidence level.

DISCUSSION

The conclusion therefore is that there is a strong positive correlation between VAT revenue and GDP. Again, as regards the test of significance, Student 't' test confirmed that VAT is significantly different in relation to GDP in Nigeria. In the view of Adam Smith's theoretical assertion that, a good tax system is economic and convenient, one may recommend the maintenance of the status quo. But a cursory look at other economies around the world, it may be reasonable to suggest introduction of reduced rate to enhance its performance. GDP and VAT study is of great importance to any economy for the following reasons: social account which comprises net national income and net national expenditure deduced by Jhingan (2004) both being major components of GDP reveals various indices like national income, national output, and national product in relation to income of individuals, income from the sales of goods and services of industries and income from transactions in international trade. How these incomes relates to consumption behaviour of economic agents (individual, government, families etc) which can boast VAT revenue for government activities. GDP data makes possible efficient and effective economic planning in a country, as can be viewed from this study which seeks to establish the relationship between VAT and GDP in Nigeria for effective revenue generation and price stability. GDP gives information about income distribution in a country, salaries and wages, rent, interest on investments and profits of various groups in the economy which can have direct bearing on VAT planning. GDP represents economic welfare of a nation through per capita income analysis. The theory is that, the higher the per capita income of a nation the better is the standard of living of the people. This, in relation to VAT implicates the raising or lowering of the rate. GDP data provides bases for national policy framework for aggregate employment planning as the data reveals the direction of change in economic activities in industrial output, savings, and investment; employment generates income which is spent on consumption goods and services leading to VAT revenue increase for the country.

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APPENDIX

Table I. GDP and VAT figures ('N' Billion)s

Years	GDP	VAT
1994	275.45	7.26
1995	281.41	20.76
1996	293.75	31.00
1997	302.02	34.00
1998	310.89	36.90
1999	312.18	47.10
2000	329.17	58.50
2001	356.99	91.80
2002	433.20	108.60
2003	477.53	136.40
2004	527.57	159.50
2005	561.93	178.10
2006	595.82	221.60
2007	634.25	289.60
2008	674.88	404.50

Source: GDP values were determined from CBN Statistical Bulletin, 2008

VAT figures are taken directly.

Coefficients[a]

Model		Unstandardized Coefficients B	Unstandardized Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Correlations Zero-order	Correlations Partial	Correlations Part
1	(Constant)	-202.382	28.864		-7.012	.000			
	GDP	.764	.065	.956	11.800	.000	.956	.956	.956

a. Dependent Variable: VAT

Tables II. Correlation test

Correlations

		VAT	GDP
Pearson Correlation	VAT	1.000	.956
	GDP	.956	1.000
Sig. (1-tailed)	VAT	.	.000
	GDP	.000	.
N	VAT	15	15
	GDP	15	15

Source: Computer printout SPSS 14.1 software

Table III. Student 't' test