



Indirect Tax, Public Debt And Nigeria Economic Performance

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ABSTRACT

The aim of the study was to determine the effect of indirect taxes on economic performance using secondary data derived from Central bank of Nigeria annual bulletin. Ex-post facto and longitudinal research design was adopted for study covering the period 1993 to 2021. Indirect tax was proxied as value added tax revenue whilst real GDP, inflation, unemployment and human development index were the dependent variables representing economic performance. Multiple regression analysis was adopted because of multiple variables in the study to determine the relationships between variables of study. Granger's causality test was used to determine the effect of reverse causality. Autoregressive distributive lag were deployed and various diagnostic test were carried out on the data set. Bound testing for cointegration based on ARDL was done. Lag selection for optimality of the model under ARDL was determined using Akaike information criteria and Schwartz Bayesian criterion. Normality test for stability of regression model was conducted using J-B procedures while serial correlation was tested using LM statistics. Unit root test for stationarity was performed using two different methods namely, the Augmented Dickey Fuller and the Kwiatkowski-Phillips-Schmidt-Shin procedure. Nyblom-Hansen statistic tests for parameter constancy against the alternative hypothesis that the parameters follow a random walk process. Variance inflation factor for multicollinearity was carried out and Visual test for stability was done using CUSUM of squares in order to eliminate doubts about possible outliers. Granger causality test causality was used for the variables in order to determine any form of reverse causality. VAT has a current coefficient which is insignificant at the 5 percent level (p-value is greater than 0.05), while the lagged coefficient is significant and positive also indicating that VAT tends to promote short run economic performance. However, in the long run vat does not exert significant influence on economic growth in Nigeria. VAT exert significant negative impacts on inflation, implying indirect tax can reduce inflation in Nigeria. Indirect tax exert significant negative impacts on human capital development in the short run and positive in the long run. Increase in VAT increases human development index. However, the study also found indirect taxes cannot be used to improve macroeconomic stability in Nigeria in the long run. We recommend that policy makers should use VAT as a long run strategy for tackling inflation whilst providing mitigants for negative consequences in the short run

Keywords: Indirect Tax, Value Added Tax, Human Development Index, Real Gross domestic product, inflation. Unemployment, public debt

INTRODUCTION

The role of taxation in economic development continues to draw intensive debate and interest amongst scholars, policy makers in Government and the general public. The reason is not farfetched. First, government of countries globally rely on tax revenue as a source of income to fulfill its responsibilities to the citizens. Secondly, variations in tax rates affect disposable income of individuals and companies whilst increases in tax rates enhances the revenue profile of government. From the economic perspective there is lack of consensus amongst scholars on the role of taxation in economic development. Richardson equivalence argued that government interventionist agenda is irrelevant to the economy while the Keynesian economist on the other hand support interventionist agenda and argue that interventions such as borrowing and fiscal policies help stabilize the economy. The neoclassical economist argue that forces of demand and supply is the unseen hand that guides economic activities and interventions in the economy is an anomaly. The Marxist contrastingly argue for a welfare state. These conflicting positions by the economists and government interest in revenue generation exacerbate the conflicts of opinion about the role of taxation in an economy and motivates further studies.

Tax is a compulsory payment made by all concerned to the government of a country from which essential services are rendered, without necessarily offering an explanation on how the money generated was spent or equating the services with the money collected. Anyanwu (1997) defined tax as a compulsory levy by the government on individuals, companies, goods and services to raise revenue for its operations and to promote social equity through the redistribution of income effect of taxation

A major form of indirect tax in Nigeria is Value added tax. Value added tax is an indirect tax in which a sum of money is levied at a particular stage in the sale of a product or service. According to Olatunji (2009) VAT system in Nigeria commenced with acceptance of the recommendation of a study group on indirect taxation in November, 1991. The introduction of VAT in Nigeria through Decree 102 of 1993 marks the phasing out for the Sales Tax Decree No. 7 of 1986. The theory on the institution of value added tax (VAT) is traced to the writings of Wilhelm Von Siemens, who proposed it as an alternative to the German turnover tax .

Macroeconomics focuses on the performance of economies - changes in economic output, inflation, interest and foreign exchange rates, and the balance of payments (CFI Team, 2019). According to Ryczkowski and Ręklewski (2020), the government of a country can increase macroeconomic performance through Monetary Policy strategies implemented by central bank by influencing through policy money supply and interest rates. Monetary policy is an action that influences money supply and interest rates. On the other hand the government implements fiscal policy through spending and taxes to guide the macroeconomy. Government spending influences job creation and infrastructure improvements, which, in turn, affects money in circulation.

Given the enormous scale of government budgets and the impact of economic policy on consumers and businesses, macroeconomics clearly concerns itself with significant issues. Properly applied, economic theories can offer illuminating insights on how economies function and the long-term consequences of particular policies and decisions. Macroeconomic theory can also help individual businesses and investors make better decisions through a more thorough understanding of the effects of broad economic trends and policies on their own industries.

Studies on the role of indirect taxation in Nigeria economic development present conflicting results. The persistent changes in tax policies of government especially the recent increase in VAT rate from 5 percent to 7.5 percent implies that the change could signal new economic implications both on the business entities, consumers and the revenue of government thereby creating a gap for further studies. Thirdly, prior empirical studies on the Nigerian economic response to the imposition of value added tax differ from responses obtained in other countries. Therefore, there is the need for further studies especially under the present context of an increase in Value added tax rate. The aim of the study is to determine the relationship between indirect taxes and economic performance in Nigeria whilst the specific objectives is to examine the relationship between Value added tax and gross domestic product, inflation, unemployment and human development index.

2.0 Literature

2.1 Theoretical Underpinning

The theoretical framework for the study is anchored on expectancy theory, benefits theory. According to Bhartia(2009) expectancy theory of taxation proposes that every tax policy adopted must pass the test of practicality as the prime motive by tax authorities. The theory is anchored on the belief that economic and social objective of the state is irrelevant since it is useless to adopt a tax system which the payers cannot be properly levied and the revenue accruing from tax not effectively collected. The benefits theory espoused a mutual beneficial and contractual relationship between the tax payers and the tax collectors, goods and services are provided by the state and the cost of such goods and services are contributed in the proportion of the received benefits, thus, the benefits received present the basis for distributing the tax burden in specific manner. Contrastingly the theory obliterates the probability of usage of tax policy to enhance economic growth and stabilization and sees government interventions through monetary and fiscal policies as an anomaly. However, of importance is the ability to pay theory suggesting tax should be based on graduated basis backed with the ability to pay. Adam Smith is the brain behind the principle of equity and justice, he advocates that the amount of tax payable should be equal, this by implication means that tax payable is in proportion to earned income. Equity and justice is assumed only when the tax system is based on the ability of the tax payer to pay the amount levied as tax liability.

2.2 Conceptual Framework

2.2.1 Value Added Tax

According to Damian (2018) VAT is a tax levied on the value added that results from each exchange (Damian, 2018). It is an indirect tax collected from someone other than the person who actually bears the cost of the tax. Valued- added tax (VAT) was introduced in Nigeria in January 1993 through the VAT Act No. 102 of 1993, but its implementation began in January 1994. The tax was intended to be a “Super Tax” to eradicate completely many other taxes related to goods and services. VAT was then imposed on virtually all goods and services whether produced or rendered in Nigeria or not. Exemptions however, was granted in respect of medical and pharmaceutical products, basic food items, fertilizers, agricultural and veterinary medicine, books and educational items, farming and transport equipment, etc. The Value Added Tax effectively replaced the Sales Tax, which, under the constitution, was supposed to be charged by States and not the Federal Government. Since 1994 VAT has become a major source of revenue for the government. The revenue generated was to be shared 20:80 between the federal and state government: currently it is shared 15:50:35 among the federal, state and local governments. The state’s allocation was to be earmarked as 30 per cent for the state of origin, 30 per cent for consumption/destination and 40 per cent for equality of the state. The VAT Act designates the FIRS as the responsible institution for implementing VAT. In practice, the Nigerian Custom Service collects VAT on imports on behalf of FIRS.

2.2.2 Value Added Tax Macroeconomic Performance

There are fundamentally two conflicting perspectives about the role of indirect taxes (VAT) on economic performance. First, unlike progressive income taxation, VAT facilitates economic adjustments in developing economies, but it applies a flat-rate, i.e., a regressive levy. Thus, it is argued that VAT hinder socioeconomic equality together with the absence of effective progressive taxation. Therefore, the introduction of VAT can possibly increase the level of socioeconomic inequality in society, thereby directly and indirectly hurting or stagnating human development, in particular for the poor. However, on other hand, there is the opinion, that VAT improves human development through increasing state financial capacity (Hanson 2015).

2.2.3 Inflation

There are various schools of thought on inflation, but there is a consensus among economists that inflation is a continuous rise in the prices. Inflation depicts an economic situation where there is a general rise in the prices of goods and services, continuously. It could be defined as a continuing rise in prices as measured by an index such as the consumer price index (CPI) or by the implicit price deflator for Gross

National Product (GNP). Inflation is frequently described as a state where “too much money is chasing too few goods”. When there is inflation, the currency loses purchasing power.

The purchasing power of a given number of naira will be smaller over time when there is inflation in the economy. In explaining inflation, two main issues must be examined. First, is aggregate, which implies that the rise that constitutes inflation must cover the entire basket of goods in the economy as distinct from an isolated rise in the prices of a single commodity or group of commodities. The implication here is that changes in the individual prices or any combination of prices cannot be considered as the occurrence of inflation. However, a situation may arise such that a change in an individual price could cause the other prices to rise. An example is petroleum product prices in Nigeria. This again does not signal inflation unless the price adjustment in the basket is such that the aggregate price level is induced to rise. Second, the rise in the aggregate level of prices must be continuous for inflation to be said to have occurred. The aggregate price level must show a tendency of a sustained and continuous rise over different time periods. Inflation can be subdivided into the following:

Creeping inflation: This occurs when the rise in price is very slow. A sustained annual rise in prices of less than 3 percent per annum falls under this category. Such an increase in prices is regarded safe and essential for economic growth.

Walking inflation: This occurs when prices rise moderately and annual inflation rate is a single digit. This happens when the rate of rise in prices is in the intermediate range of 3 to less than 10 percent. Inflation of this rate is a warning signal for the government to control it before it turns into running inflation.

Running inflation: When prices rise rapidly at the rate of 10 to 20 percent per annum, it is called running inflation. This type of inflation has tremendous adverse effects on the poor and middle class its control required strong monetary and fiscal measures.

Hyperinflation: Hyperinflation occurs when prices rise very fast at double or triple digit rates. This could get to a situation where the inflation rate can no longer be measurable and absolutely uncontrollable prices could rise many times every day. Such a situation brings a total collapse of the monetary system because of the continuous fall in the purchasing power of money.

There are two causes of inflation have been identified, namely, demand-pull and cost-push inflation. Demand-pull inflation is caused by an increase in the conditions of demand; these could either be an increase in the ability to buy goods or an increase in the willingness to do so. Cost – push inflation arises from anything that causes the conditions of supply to decrease. Some of these factors include a rise in the cost of production, an increase in government taxation and a decrease in quantity of goods produced.

2.2.4 Unemployment

Unemployment rate can be defined by either the national definition, the ILO harmonized definition, or the OECD harmonized definition. The OECD harmonized unemployment rate gives the number of unemployed persons as a percentage of the labor force (the total number of people employed plus unemployed). [OECD Main Economic Indicators, OECD, monthly As defined by the International Labor Organization, "unemployed workers" are those who are currently not working but are willing and able to work for pay, currently available to work, and have actively searched for work.

2.2.5 Human Development Index

The Human Development Index (HDI) is a summary measure of average achievement in key dimensions of human development composing of a long and healthy life, having adequate knowledge and a decent standard of living. The human development is the geometric mean of normalized indices for each of the three dimensions comprising health, education and expected life span. The health dimension is assessed by life expectancy at birth, the education dimension is measured by mean of years of schooling for adults aged 25 years and more and expected years of schooling for children of school entering age. The standard of living dimension is measured by gross national income per capita. The human development index uses the logarithm of income, to reflect the diminishing importance of income with increasing GNI. The scores for the three HDI dimension indices are then aggregated into a composite index using geometric mean. Refer to technical notes for more details. The Human development index can be used in assessing national policy choices, asking how two countries with the same level of GNI per capita can end up with

different human development outcomes. These contrasts can ignite debate concerning governmental policy priorities. The Human Development Index (HDI) is a summary measure of average achievement in key dimensions of human development: a long and healthy life, being knowledgeable and having a decent standard of living. The HDI is the geometric mean of normalized indices for each of the three dimensions. The health dimension is assessed by life expectancy at birth, the education dimension is measured by mean of years of schooling for adults aged 25 years and more and expected years of schooling for children of school entering age. The standard of living dimension is measured by gross national income per capita. The HDI uses the logarithm of income, to reflect the diminishing importance of income with increasing GNI. The scores for the three HDI dimension indices are then aggregated into a composite index using geometric mean. Refer to technical notes for more details.

The HDI can be used to question national policy choices, asking how two countries with the same level of GNI per capita can end up with different human development outcomes. These contrasts can stimulate debate about government policy priorities.

The HDI simplifies and captures only part of what human development entails. It does not reflect on inequalities, poverty, human security, empowerment, etc. The HDRO provides other composite indices as broader proxy on some of the key issues of human development, inequality, gender disparity and poverty. A fuller picture of a country's level of human development requires analysis of other indicators and information presented in the HDR statistical annex

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2.3 Empirical Review

Adele and Fasoye (2022) examined the effect of VAT on economic growth in Nigeria between 1994 and 2020 using consumer price index (CPI) as a threshold, and found that a VAT above the 10 percent threshold value endangers the economy while a VAT below the 7.59 percent threshold value does not harm the economy; rather, it improves people's well-being

Oraka *et al.* (2017) determined the extent to which value added tax has affected the Nigerian economy, where the study revealed that value added tax has not significantly affected Gross Domestic Product of Nigeria economy, and that VAT has a negative relationship with per capital income.

Adele and Fasoye (2022) examined the effect of VAT on economic growth in Nigeria between 1994 and 2020 using consumer price index (CPI) as a threshold. A technique of Threshold Vector Autoregressive (TVAR) was employed and the results reveal that a VAT above the 10 percent threshold value endangers the economy while a VAT below the 7.59 percent threshold value does not harm the economy; rather, it improves people's well-being. It is therefore recommended that Nigerian economy should maintain the lower VAT threshold to cushion the effect of ever rising CPI on the citizens.

Oraka *et al.* (2017) determined the extent to which value added tax has affected the Nigerian economy. Ex post facto research design was adopted for this study. In measuring Nigerian economy, Gross Domestic Product (GDP), Per Capital Income (PCI) and Total Revenue (TR) were used in the study for the period 2003 to 2015. Findings shows that value added tax has not significantly affected Gross Domestic Product of Nigeria economy. It was also discovered that VAT has a negative relationship with per capital income. Finally, we found that VAT has a positive relationship with total revenue generation of Federal government of Nigeria. The implication of these findings is that Nigerian economy will experience slow development in spite that VAT has a positive effect on revenue generation.

Nwosu (2010) examined the relationship between tax structure and economic growth in Nigeria using annual data between 1970 to 2007. The motivation is to track the impact of the observed change in the tax structure on economic growth in order to inform policy. Two tax structures namely pre-Value Added Tax (VAT) and post VAT were identified and their impacts evaluated. Value Added Tax (the variable that captures the difference in the two identified tax structures) showed consistent and insignificant positive

relationship with growth rate of real GDP. The Granger causality results indicate that the variables do not Granger-cause each other. From the results, it could be inferred that the change from one tax structure to another has not made any significant difference on economic growth rate in Nigeria. However, the positive but weak relationship that the Value Added Tax (VAT) bears with economic growth is an indication that the introduction of VAT in changing the tax structure in Nigeria has potentials for positively impacting on economic growth in Nigeria. This study therefore, recommends that the implementation of the Value Added Tax be improved upon so that its potential impact on growth can be realized.

Manukaji (2018) determined the effect of tax structure on economic growth in Nigeria. The study made use of time series data from 1994 to 2016. (Value added tax revenue has significant effect on economic growth in Nigeria.

Alexander *et al.* (2019) used annual time series data to examine the effect of taxation on economic growth in Nigeria over a period of 1980 to 2018 Value Added Tax selected for this study have significant effects on economic growth process. The effect of these taxes on economic growth in Nigeria is even more pronounced in the long-run than in the short-run

Uzoka and Chiedu (2018) studied the effect of revenues from taxation on the growth of the economic in Nigeria between 1997 -2016. significant effect of VAT on the growth of Nigeria economic.

Okwara and Amori, (2017) examined the effect of revenue from taxation on growth of Nigerian economic from 1994 to2015 value added tax having adverse association and statistically insignificant for the review period.

Oladimeji (2017) explored the relationship between tax revenue in Nigeria and her economic growth., value added tax have a positive impact on GDP and overall, a significant relationship between tax revenue and the Nigerian economic growth exists. VAT has highest adjusted R-Square among all independent variables tested, we recommended among others that VAT rate should be reviewed upward and efficient tax policy should be formulated and implemented to increase government revenue from taxes and thereby boost the economic growth of the entire nation.

Adesina (2011) in their studies “value-added tax and economic growth of Nigeria”, adopted GDP as a measure for Economic Growth on Value-Added Tax (VAT). The study revealed a considerable share of the difference in economic growth measured by GDP is accounted by revenue from VAT as the coefficient of determination was put at 0.950544. The study revealed the presence of a positive and significant correlation between revenue from VAT and GDP. In fact, the data showed fluctuation in both variables (VAT and GDP) studied over the study period although VAT revenue was more stable. There was however none existence of causation between GDP and VAT revenue.

Onaolapo, Aworemi and Ajala (2013) in examining impact of VAT on revenue generation using stepwise regression analysis found that VAT has statistically significant effect on revenue generation in Nigeria..

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Rasaki *et al.* (2020) investigated impact of Value Added Tax (VAT) on Economic Growth in Nigeria. The objectives of the study are to examine the impact of value added tax and economic growth and to determine the causal relationship between value added tax and economic growth in Nigeria. Secondary data sourced from Central Bank of Nigeria Statistical Bulletin was used for the study. The data properties were tested for unit root using Augmented Dickey-Fuller, Bound test co-integration was used to test for the long run relationship between the variables. The result revealed that value-added tax positively and significantly impacted on economic growth of Nigeria both in the long-run and short-run. The causality test also indicated that there was a causal relationship between Value Added Tax and economic growth in Nigeria during the period under study. The study therefore recommended that government should increase

the VAT rate and eliminate every VAT revenue leakage since it was found to have positive effect on economic growth in Nigeria.

In South Africa, using ordinary least squares (OLS) estimation techniques on quarterly data from February 2000 to July 2010, Phiri (2010) conducts a study on the inflation level that could be considered harmful to growth-financing activities. The variables for the analysis are real gross domestic product, inflation rate, capital accumulation, lending capacity of banks, equity trade volume, and exchange rate. The result indicates that inflation depicts an adverse effect on growth-financing activities in South Africa at all levels.

Mkhatshwa et al. (2015) analyze how the inflation rate affects both economic and agricultural growth in Swaziland for the period 1980–2013. The autoregressive distributed lag (ARDL) result indicates that inflation depicts a negative relationship, while agricultural growth indicates a positive relationship on the growth of Swaziland. The causality test shows unidirectional relationship between the growth of the economy and the inflation, rate while no causal relationship was found among other variables.

Mamo (2012) conducts a study among 13 SubSaharan Africa (SSA) countries from 1969 to 2009 on how inflation affected the economic growth. The study employs panel regression on variables, which include inflation, investment, population, and gross domestic product. The study shows that the inflation rate and economic growth are inversely related, while Granger causality reveals that the inflation rate in the country can be used to predict the growth rate among countries.

Kasidi and Mwanemela (2015) analyzed the influence of inflation on the economic growth for the period 1990–2011 in Tanzania using correlation and co-integration techniques, and state that no strong relationship exists between inflation rate and the growth of their economy.

Employing Johansen co-integration and Granger causality test, Denbel et al. (2016) investigate if there is any relationship among money supply, inflation, and economic growth in Ethiopia. The results from Johansen co-integration support the work of Mkhatshwa et al. (2015), while the direction of causality indicates that its runs from economic growth to inflation rate and from money supply to economic growth.

Al-Taeshi (2016) examines how inflation impacts Malaysian economy from 1970 to 2014 using co-integration and Granger causality test. Evidence from the study suggests that inelastic response was found between economic growth and inflation rate. Using the panel analysis,

Ndoricimpa (2017) studies inflation threshold on economic growth in some selected African countries. The result indicates the nonlinear relationship between the two variables, and that low inflation enhances the growth of the economy in the middle-income countries, while it has no effect on the sample put together. The result also shows that inflation beyond the threshold negatively influences the economy in all the countries.

Inyiama (2013) employs Johansen co-integration and Granger causality test to determine if inflation weakens the growth of Nigerian economy for the period 1979–2010. The result shows that the rate of inflation is inversely related on economic growth, while the exchange rate and interest rate indicate a direct impact on the economy. The causality test indicates no causal relationships between inflation rate and economic growth..

Anochiwa and Maduka (2015) determine if any relationship can be found between the growth of the economy and inflation rate in Nigeria during 42 years (1970–2012). The results of Johansen co-integration test reveal the nonlinear negative influence between the two economic variables, while Granger causality indicates no causal relationship between them.

Chude and Chude (2015) employ time-series data from 2000 to 2009 using ordinary least squares regression estimation technique to examine the influence of inflation on economic growth of Nigeria. The result indicates the positive and significant relationship between inflation, exchange rate and growth of the economy.

Olu and Idih (2015), using least squares method, analyze the influence of inflation on economic growth of Nigeria from 1980 to 2013. The result shows an insignificant positive relationship between two variables.

Shuaib et al. (2015) employ co-integration and Granger causality tests to examine how inflation rate affects the economy of Nigeria for the period 1960–2012. The result reveals no long-run relationship in the model, while causality test also indicates no causal relationship among the variables.

Enejoh and Tsauni (2017) examined how inflation rate affects the country's economy using ARDL techniques and Granger causality during 47 years (1970–2016). The result indicates that inflation rate and exchange rate have a positive impact on economic growth, while the lagged value of exchange rate indicates a negative relationship with the growth of the economy. The causality test shows no causal relationship between inflation rate, exchange rate and the growth of Nigeria economy.

Anidiobu et al. (2018) determine the influence of inflation on the economic growth of Nigeria using descriptive and ordinary least squares on the data for the period 1986–2015. The result indicates that inflation rate depicts an insignificant positive relationship, exchange rate shows a significant positive relationship, while there is a negative insignificant relationship between interest rate and growth of Nigeria economy.

Idris and Suleiman (2019) investigate the influence of inflation on economic growth of Nigeria from 1980 to 2017. The study employs vector error correction mechanism on variables selected, which are gross domestic product, inflation rate, interest rate, and exchange rate in the country. Findings reveal longrun relationship among the variables and that inflation rate and interest rate affect the economic growth of Nigeria significantly and negatively in the long run.

Osuji (2020) empirically examined inflation's effect on household final consumption expenditure in Nigeria from 1981 to 2018 using the ordinary least square econometric method. The study showed a positive significant long-run relationship between inflation and household consumption expenditure in Nigeria. The study also recommended that the government maintain low and stable prices at all time in order to reduce the adverse effect of inflation on private consumption.

Adaramola & Dada (2020) examined the influence of inflation on the Nigerian economy's growth prospects. The study findings indicated that inflation and real exchange rate significantly negatively impact economic growth, while the interest rate and money supply indicate a positive and significant impact on economic growth. The causality result also shows the unidirectional relationships between interest rate, exchange rate, government consumption expenditures and gross domestic product, while inflation and the degree of openness show no causal relationship with gross domestic product. As a result, the study recommended that the monetary authorities need a more pragmatic effort

Idris & Bakar (2017) explored Nigeria's inflationary trend to determine its impact on economic growth. The study employed a descriptive method and further used charts to show the inflationary trend and GDP growth to better understand how Nigeria's inflation rates affect the desired economic growth level. The study concluded that Nigeria's current inflationary trend negatively affects sustainable growth and development

.Lou and Iddah (2015), investigated the nature of the relationship between inflation and economic growth in Nigeria using annual time series data from 1980 to 2013. The variables used for the study are Gross Domestic Product (GDP) as a dependent variable, while the independent variables are: Inflation rate, Exchange Rate (EXCHR), input of labor and Capital. The study used the Ordinary Least Square to capture the impact of the dependent variable on the independent variables. The result shows that inflation has positive impact on the economic growth in Nigeria. The positive impact of inflation on economic growth is in line with the finding of Aminu and Anon (2012). The major limitation of this study is that it fails to test unit root properties of the series.

Mthethwa et al. (2015) analyze how the inflation rate affects both economic and agricultural growth in Swaziland for the period 1980–2013. The autoregressive distributed lag (ARDL) result indicates that inflation depicts a negative relationship, while agricultural growth indicates a positive relationship on the growth of Swaziland. The causality test shows unidirectional relationship between the growth of the economy and the inflation, rate while no causal relationship was found among other variables.

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Andiroba et al. (2018) determine the influence of inflation on the economic growth of Nigeria using descriptive and ordinary least squares on the data for the period 1986–2015. The result indicates that inflation rate depicts an insignificant positive relationship, exchange rate shows a significant positive relationship, while there is a negative insignificant relationship between interest rate and growth of Nigeria economy. Empirical studies on impact of unemployment on economic performance are shown in the next paragraph

Manuel Garcia-Ramos and Gerardo Fujii-Gambero (2008) measured the impacts of unemployment on Mexico's output gap from 1993Q to 2016Q4, from an econometric modelling point of view, the models allow symmetric interactions between output and unemployment. They concluded that Okun's law has a stable relationship in Mexico. When actual Gross Domestic Products is less than potential output, the unemployment gap rises by 0.17% points. It implies that an increment of unemployment gap of one percent is associated with an output loss of -5.88 of potential output.

Karanassou, Sala and Snower (2008) analyzed the context of the new Phillips curve (NPC), there is frictional growth which generates an inflation-unemployment tradeoff in the long run. They argued that a holistic framework, like the chain reaction theory (CRT), should be used to jointly explain the evolution of inflation and unemployment. A further attraction of the CRT approach is that it provides a synthesis of the traditional structural macro econometric models and the (structural) vector auto regressions (VARs).

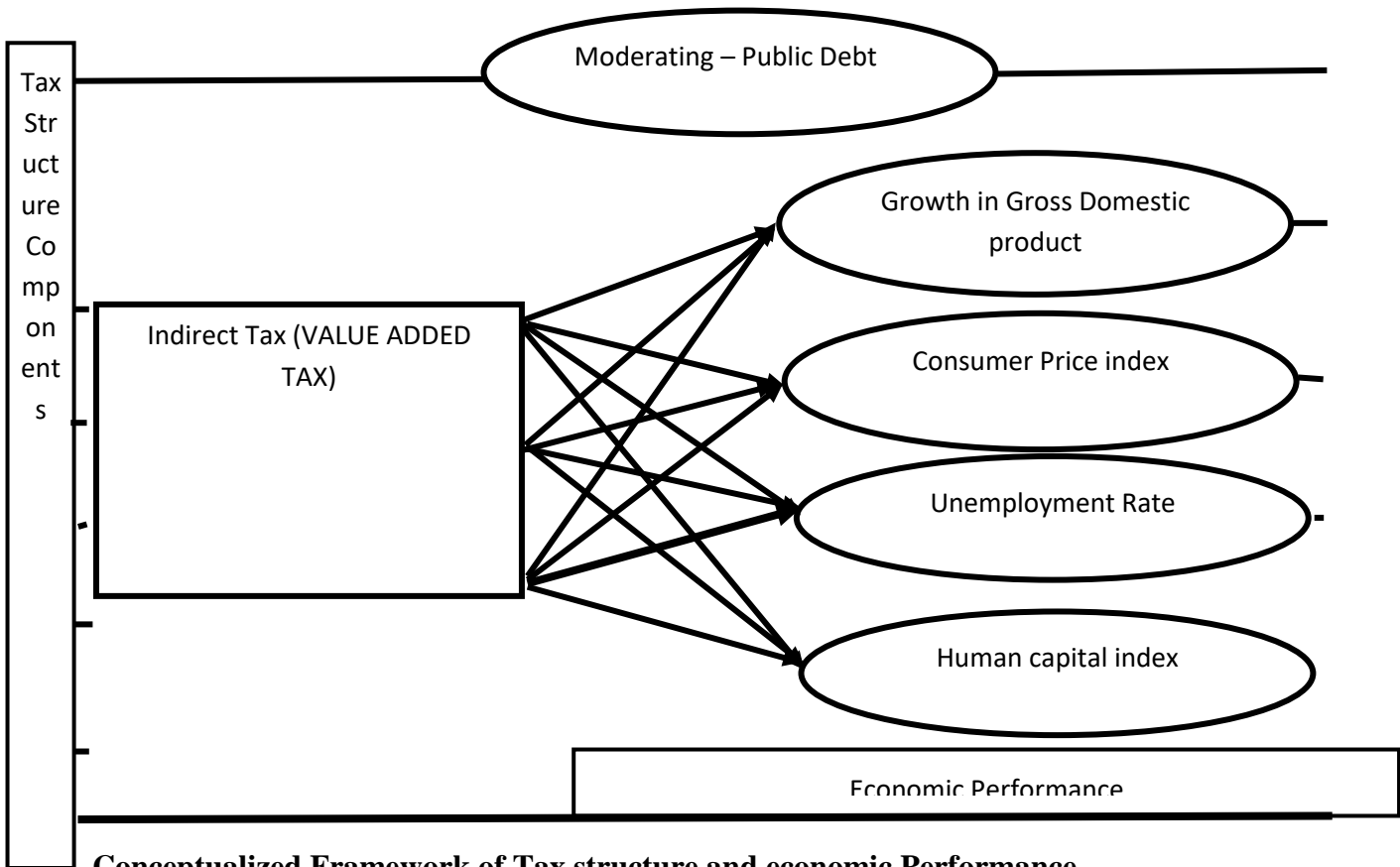
Patrick Nüß (2013) explored the relationship between inflation and unemployment in Germany during the period from 1970 to 2012 and found that there is no short run negative relationship between inflation and unemployment, and consequently the short run Phillips curve is an unsuitable instrument for making political decisions

Furuoka and Munir (2014) examined Unemployment and Inflation in Malaysia: Evidence from Error Correction Model. The main finding of the current inquiry is that there existed an equilibrium relationship between unemployment rate and inflation rate in Malaysia. In other words, the results of this study support the validity of the Phillips Curve hypothesis.

Hernández,Pérez-Sotoy and Godínez-Montoya (2016) analyzed some macro-economic variables that affect inflation and unemployment, 1980-2015 in Mexico, a model of multiple linear regression was developed. They were highly significant statistically exchange rate and the interest rate. Unemployment elasticity with respect to GDP and FDI was: 3.44×10^{-6} , 1.24×10^{-4} , respectively, which indicated that the 10.0% increase in each of these, the unemployment rate varies very little. For inflation with interest rate was 1.4%, compared to an increase of 10.0% of this, the inflation rate increased by 14.0%.

Odo Elom-Obed, Nwachukwu and Okoro (2017) investigated the relationship between unemployment and inflation in Nigeria from 1980-2015. The model specified unemployment as a function of inflation, money supply is a % GDP, total government expenditure % of GDP: Inflation significantly impacted unemployment in Nigeria both in the long run and short run within the period under review. This implies that increase in government expenditure reduces unemployment, it can also be inferred from the result that government spending creates employment to the extent that inflation remains within the single digit limit.

Omitogun and Longe (2017) investigated the impact of unemployment on economic growth in Nigerian the 21st century using the VAR model. Their research revealed that the impact of unemployment, inflation rate, exchange rate and government expenditure varies over the periods. Unemployment and inflation, among other variables were found to have contributed mostly to the variations in the growth of the economy over the period. This is because the price and sustainability mean of the economy is a factor which needs full attention to avoid a downturn growth.



Conceptualized Framework of Tax structure and economic Performance

3.71 Independent variables

The independent variable used in the study is value added tax, This represent tax on consumption of goods and services

3.72 Dependent variable

The dependent variables for this study are inflation, real gross domestic product and unemployment rate and Human development index The variable of study are proxied for economic performance.

3.7.3 Control variables

The control variable for the study is public debt. This represents total foreign and domestic debts. When there is budget deficit the gap between revenue and expected expenditure is normally filled through borrowing and is referred to as deficit financing. Public debt play a role in economic development when it is not excess of the allowed thresh hold. In view of the impact public debt will have on economic development it is controlled in this study so that it will not affect the result of the study.

Model specification

In an attempt to examine the effect of indirect taxation on economic performance, the study modifies the model in the works of Idris and Suleiman (2019) and Inyama (2013). In line with their models, the model for this study is formulated as follows:

The functional relationship based on the dependent and independent variable is stated thus:

$$ECP = f(PIT, PPT, CIT, VAT,)... \dots\dots\dots (i)$$

$$ECP = GDP, INFL, UNE$$

Specifically, we formulate that:

$$\text{LogRGDP} = f(\text{VAT}, \text{PUD},) \dots\dots\dots (ii)$$

$$\text{INF} = f(\text{VAT}, \text{PUD},) \dots\dots\dots (iii)$$

$$\text{UNE} = f(\text{VAT}, \text{PUD},) \dots\dots\dots (iv)$$

$$\text{HDI} = = f(\text{VAT}, \text{PUD},)$$

From the functional relationship we derive the estimation thus:

$$\text{RGDP} = \beta_0 + \beta_1 \text{LogVAT} + \beta_4 \text{PLogPUD} + U_{1,t} \quad (v)$$

$$\text{INF} = \beta_0 + \beta_1 \text{LogVAT} + \beta_7 \text{PLogPUD} + U_{2,t} \quad (vi)$$

$$\text{UNE} = \beta_0 + \beta_1 \text{LogVAT} + \beta_4 \text{PLogPUD} + U_{3,t} \quad (vii)$$

$$\text{HDI} = \beta_0 + \beta_1 \text{LogVAT} + \beta_7 \text{PLogPUD} + U_{4,t} \quad (viii)$$

Estimation techniques

Unit root test

Macroeconomic variables are generally known with their random walk nature, which can be mitigated when converting it into first differencing. Datta and Kumar (2011) note that regressing a non-stationary series on another would generate spurious results. In an attempt to guide against this, Augmented Dickey-Fuller (ADF) technique developed by Dickey and Fuller (1979) was employed. This test is necessary as it guides the study on the selection of appropriate estimation techniques required for the analysis. The trend and intercept of the unit root are represented in equations (8) and (9), respectively:

$$\Delta Y_t = \beta_0 + \lambda Y_{t-1} + \beta_i \Delta Y_{t-1} + \mu_t \quad \text{for intercept} \dots\dots\dots (1)$$

$$\Delta Y_t = \beta_0 + \lambda Y_{t-1} + \beta_i \mu + \beta_i \Delta Y_{t-1} + \mu_t \quad \text{for trend} \dots\dots\dots (2)$$

where t Y is the tested variable for unit root, Δ is the first difference, t i μ denotes error term at period , i 1 tY– represents the one period lag of the tested variable for unit root.

Autoregressive distributed lag (ARDL)

Following the unit root test, the study proceeds to examine short- and long run relationship among the variables. This is done using autoregressive distributed lag (ARDL) known as the bound test approach to co-integration. ARDL model developed by Pesaran, Shin and Smith (1996) and later popularized by Pesaran, Shin and Smith (2001) is more advantageous to other co-integration procedures as it can be used when the variables under consideration are integrated of order zero I(0) and order one I(1) but will crash when integrated stochastic trend of I(2) is found.

$$\Delta \text{RGDP}_t = \beta_0 + \sum \beta_1 \Delta \text{LogVAT}_{t-1} + \sum \beta_2 \Delta \text{LogPUD}_{t-1} + \alpha_0 + \alpha_1 \Delta \text{Log} + \alpha_1 \Delta \text{Log}_{\text{VAT}_{t-1}} + \alpha_2 \Delta \text{Log}_{\text{PUD}_{t-1}} + U_{1,t} \quad (ix)$$

$$\Delta \text{INF}_t = \beta_0 + \sum \beta_1 \Delta \text{LogVAT}_{t-1} + \sum \beta_2 \Delta \text{LogPUD}_{t-1} + \alpha_1 + \alpha_1 \Delta \text{Log}_{\text{VAT}_{t-1}} + \alpha_2 \Delta \text{Log}_{\text{PUD}_{t-1}} + U_{2,t} \quad (x)$$

$$\Delta \text{UNE}_t = \beta_0 + \sum \beta_1 \Delta \text{LogVAT}_{t-1} + \sum \beta_2 \Delta \text{LogPUD}_{t-1} + \alpha_1 \Delta \text{Log} + \alpha_1 \Delta \text{Log}_{\text{VAT}_{t-1}} + \alpha_2 \Delta \text{Log}_{\text{PUD}_{t-1}} + U_{3,t} \quad (xi)$$

$$\Delta \text{HDI}_t = \beta_0 + \sum \beta_3 \Delta \text{LogVAT}_{t-1} + \sum \beta_4 \Delta \text{LogPUD}_{t-1} + \alpha_1 \Delta \text{Log} + \alpha_1 \Delta \text{Log}_{\text{VAT}_{t-1}} + \alpha_2 \Delta \text{Log}_{\text{PUD}_{t-1}} + U_{4,t} \quad (xii)$$

The ARDL long-run model is estimated if cointegration is found while the short-run model is estimated if otherwise

$$\Delta \text{RGDP} = \beta_0 + \beta_1 \text{LogVAT}_{t-1} + \beta_2 \text{LogPUD}_{t-1} + U_{1,t} \quad (\text{xii})$$

$$\Delta \text{INF} = \beta_0 + \beta_1 \text{LogVAT}_{t-1} + \beta_2 \text{LogPUD}_{t-1} + U_{2,t} \quad (\text{xiii})$$

$$\Delta \text{UNE} = \beta_0 + \beta_1 \text{LogVAT}_{t-1} + \beta_2 \text{LogPUD}_{t-1} + U_{3,t} \quad (\text{xiv})$$

$$\Delta \text{HDI} = \beta_0 + \beta_1 \text{LogVAT}_{t-1} + \beta_2 \text{LogPUD}_{t-1} + U_{3,t} \quad (\text{xv})$$

$$\Delta \text{RGDP} = \alpha_0 + \alpha_1 \Sigma \Delta \text{LogVAT}_{t-1} + \alpha_2 \Sigma \Delta \text{LogPUD}_{t-1} + \text{ECM} + U_1$$

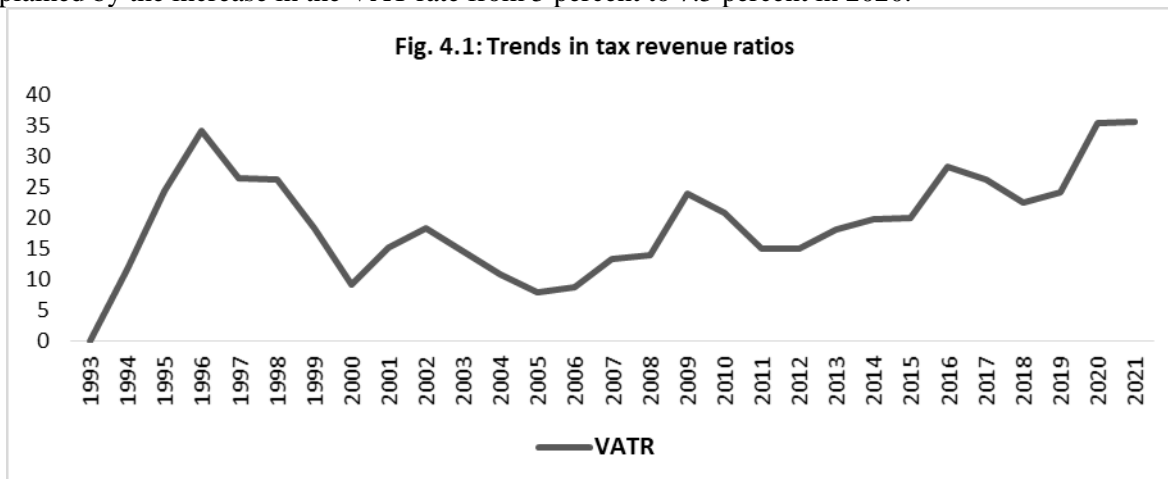
$$\Delta \text{INF} = \alpha_0 + \alpha_1 \Sigma \Delta \text{LogVAT}_{t-1} + \alpha_2 \Sigma \Delta \text{LogPUD}_{t-1} + \text{ECM} + U_2$$

$$\Delta \text{UNE} = \alpha_0 + \alpha_1 \Sigma \Delta \text{LogVAT}_{t-1} + \alpha_2 \Sigma \Delta \text{LogPUD}_{t-1} + \text{ECM} + U_3$$

$$\Delta \text{HDI} = \alpha_0 + \alpha_1 \Sigma \Delta \text{LogVAT}_{t-1} + \alpha_2 \Sigma \Delta \text{LogPUD}_{t-1} + \text{ECM} + U_3$$

4.1.1 Trend Analysis

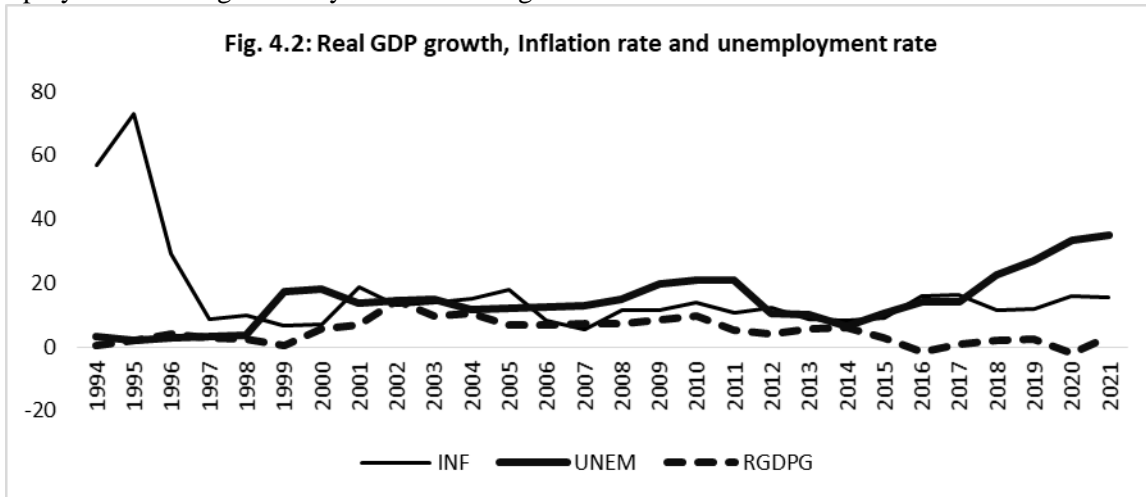
The pattern of data characteristics is initially highlighted by presenting trends in relevant variables and the related summary statistics. The trend presented in Figure 4. It is also seen that before 2012, the shares of VAT revenue streams in total taxes moved *in tandem* with very rapid upward increases and declines. For instance, from a high proportion of 26.2 percent in 1998, the share of VAT in total tax dropped to 9.2 percent in 2000 and further quickly rose to 18.4 percent in 2002. There was a slight divergence in the trend after 2010 when VAT moved in more steady form. The rise in the share of VAT in 2020 can be explained by the increase in the VAT rate from 5 percent to 7.5 percent in 2020.



Source: Author's computation based on data from CBN

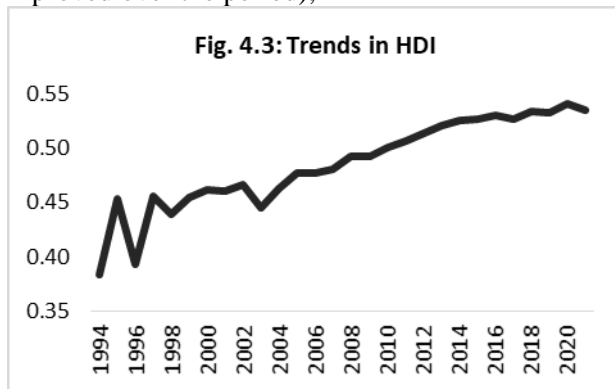
The trends in real GDP growth, inflation rate and unemployment rate are presented in Figure 4.2. In the chart, it can be seen that all three variables moved in similar patterns between 2001 and 2014. These is the era of one of the best economic growth patterns in the country. Thus, it appears that the rate of economic growth tends to drive the other macroeconomic factors in Nigeria. There were also periods of wide disparities in the three variables. For instance between 1994 and 1997, inflation was very high, reaching 72.5 percent in 1995, while both GDP growth and unemployment rates were relatively low. Also, from

2015, all three variables took different patterns, with inflation maintaining a steady flat level, while unemployment rose significantly and real GDP growth declined.



Source: Author's computation based on data from WDI

The trend in Human development index is reported in Figure 4.3 indicating there is upward movement over the period. This pattern of movement is beneficial for HDI (indicating that human capital has improved over the period),



4.1.2 Summary Statistics

The descriptive statistics of the time series data for the variables used in the study are reported in Table 4.1. The Table shows the mean and other moment conditions for each of the variables. For the period in the study, average real GDP growth rate was 4.95 percent, which is moderate and suggests that the Nigerian economy has not performed too well on average between 1993 and 2021. The maximum value of 14.6 percent however indicates that these were periods of very high growth in the economy. Average unemployment rate is 14.78 and it is very high. In addition to the two-digit average inflation rate of 14.77 percent in the economy over the period, it can be seen that Nigerians faced a very high misery index (combination of inflation and unemployment) during the period of the study. Thus, it is seen that macroeconomic performance over the period was not impressive. Indeed, inflation rate was as high as 72.8 percent at a certain period, while unemployment rate was up to 35 percent as a maximum.

Table 4.1: Descriptive Statistics

Variable	Mean	Max.	Min.	Std. Dev.	Skew.	Kurt.	J-B	Prob.
RGDPG	4.95	14.60	-1.92	3.78	0.34	3.08	0.53	0.77
UNEM	14.78	35.00	1.90	8.35	0.67	3.31	2.12	0.35
INF	14.77	72.80	5.40	12.58	3.84	18.17	325.20	0.00
HDI	0.49	0.54	0.39	0.04	-0.45	2.59	1.11	0.58
VAT	20.25	35.56	8.01	7.80	0.37	2.40	1.01	0.60
PUD	22.33	61.51	7.01	17.2	1.27	5.54	5.65	0.98

Source: Author's computation

The human development index which is a combination of inflation and unemployment was 0.49 on average, with a maximum value of 0.54 and a minimum of 0.39. This suggests that the rate of human development in the country is low. On the other hand, minimum VAT share of 8.01 percent. The ratio of public debt to GDP is 22.33 percent on average, with a maximum value of 61.5 percent. This shows that public debt to GDP ratio is high with implications on debt overhang in the country.

For the other measures of moment conditions, an important statistic is the Jacque-Bera (J-B) statistic which indicates pattern of normality of probability distribution of the datasets. This pattern of probability distribution is important for the system of estimation adopted in the analysis. In Tables 4.1 the J-B statistic for all the variables (except three – INF and EXC) are insignificant, which means that the hypothesis of non-normality of the data series can be rejected at the 5 percent level. Thus, it can be seen that most of the series are normally distributed and the data can therefore be estimated within a time series-based estimation framework like the one employed in this study.

The initial patterns of relationship among the variables are observed through the computed correlation matrix which is shown in Table 4.2. Moreover, it is necessary to observe the dataset in terms of any estimation problems that may arise from the use of the dataset. Indirect tax is strongly related to modern sector economic activities, although they differ in terms of the tax burden definition

The other variables in the model also have interesting correlation outcomes. There is a strong positive correlation between real GDP and unemployment, which is a surprising outcome. This is because rising GDP should lead to decline in unemployment. However, as Adegboye (2020) has found, economic growth in many African economies does not reflect in the employment rate. Rather growth has co-existed with rising unemployment (especially youth unemployment) in many African economies, including Nigeria. Inflation rate is negatively correlated with both real GDP and unemployment.

Table 4.2: Correlation Matrix

Variable	VAT	RGDP	UNEM	INF	HDI
VAT	1				
RGDP	0.977 (0.00)	1			
UNEM	0.741 (0.00)	0.692 (0.00)	1		
INF	-0.228 (0.24)	-0.248 (0.20)	-0.370 (0.05)	1	
HDI	0.813 (0.00)	0.857 (0.00)	0.615 (0.00)	-0.466 (0.01)	1

Source: Author's computation

The major aspect in which this study seeks to make extant contribution is on how the indirect tax in Nigeria influences macroeconomic performance in a distributional form. The relationships are demonstrated in forms of scatterplots along with fitted regression equations. Given that the logs of the variables are used for plotting the relationship curves, the coefficients of the slopes could be considered as the elasticities among the tax and revenue variables.

4.2 Tests of Time Series Properties of the Variables

4.2.1 Unit Root

Table 4.3: Unit Root test for Variables

Variable	ADF Test		KPSS		Order of Integration
	Levels	First Difference	Levels	First Difference	
<i>RGDP</i>	-1.79	-4.044*	0.686*	0.336	I[1]
<i>UNEM</i>	-0.471	-4.326*	0.515*	0.153	I[1]
<i>INF</i>	-3.407*	-5.193*	0.341	0.249	I[0]
<i>HDI</i>	-2.537	-20.96*	0.674*	0.226	I[1]
<i>VAT</i>	-2.703	-5.181*	0.673*	0.354	I[1]
<i>PUD</i>	-1.152	-7.067*	0.632*	0.232	I[1]

Note: * indicates signifies at 5 percent; 95% critical values are reported in parentheses below each test value

Source: Author's computation

The KPSS test for stationarity (which helps to improve on the robustness of the unit root test by ADF) “is more relevant in capturing the actual stationarity patterns of the series since the test hypothesis particularly show whether the series are stationary or not and not in reference to the possession of unit roots”. The interpretation of the test outcomes is as follows: a significant KPSS coefficient for a variable indicates non-stationarity. In other words, the null hypothesis for the test is that the data is stationary; while the alternate hypothesis for the test is that the data is not stationary. The result shown in the second panel of Table 4.3 indicates that for each of the series (except *INF*), the null hypotheses of stationarity cannot be rejected for the variables in first differences (the tests statistics fail the test). This indicates that the series are difference-stationary and that all the variables are actually I[1]. Thus, a dynamic long run relationship may be estimated based on the ARDL approach to cointegration for the dynamic analysis (Ighodaro & Adegboye, 2020).

4.2.2 Cointegration Analysis

The unit root test above suggests that most of the variables are I(1) while one is I(0). This suggests that the traditional test for common stochastic trends in the data series (or cointegration test) may not be sufficient for determining the long run relationship. Hence, following Pesaran et al (2001), an ARDL approach to cointegration is conducted in the study. In this direction, the Bounds testing procedure for cointegration is adopted in this study. Moreover, the application of error correction processes (based on the ARDL approach to cointegration) further indicates the relevance of the cointegration tests. The results of the Bounds test for cointegration are shown in Table 4.4 and the evaluations are based on the critical F-statistic values for the lower and upper bounds.

Table 4.4: Results of Bounds Approach to Cointegration Test

Equation (Dependent variable)	F-stat	I0 Bound (5%)	I1 Bound (5%)	Cointegration
Real GDP	9.72	2.27	3.28	Yes
Unemployment rate	4.597	2.27	3.28	Yes
Inflation rate	48.96	2.27	3.28	Yes
HDI	16.43	2.27	3.28	Yes

Source: Author's computations

In the Bounds test result in Table 4.4, the following procedure is used for evaluation: if at the 5 percent significance level, the estimated F-value is greater than both the lower test (I0 Bounds) and the upper test (I1 Bounds) values, then there is no cointegration among the variables. If the estimated F-value lies between the two Bounds values, then there is need to proceed with a lesser structure of the ECM analysis by applying the Josselius procedure. From the Table, the F values for the tests are all greater than both the lower and upper Bounds values at the 5 percent levels. According to the empirical output of the F-values in all the panels of Table 4.4 therefore, it can be seen that the null hypothesis of no long-run relationship between macroeconomic variables and tax structure composition is rejected at the 5 percent level. These results reveal that for each of the equations for the tax structure components and the other control variables have strong long run relationships with the dependent variable.

4.3 Analysis of ARDL Results

The optimum lag length is determined by considering the least values for the test coefficients. The result is shown in Table 4.5 and indicates that, for each of the equations, the second lag possesses the minimum values. This implies only the first lag is expected to be retained for the ARDL estimation since each of the selection tests indicates the first lag as the optimum lag length. Thus, a lag structure of two periods is selected as representing the structure that will ensure more stable coefficient estimates. The low optimal lag structure may be related to the small sample used in the study as suggested by Ighodaro and Adegboye (2020).

Table 4.5: Lag Length Selection Criteria

<i>No of Lags</i>	RGDP		UNEM		INF		HDI	
	<i>AIC</i>	<i>SC</i>	<i>AIC</i>	<i>AIC</i>	<i>SC</i>	<i>SC</i>	<i>AIC</i>	<i>SC</i>
0	3.88	4.18	3.12	20.9	2.53	1.34	2.42	1.04
1	-1.81	-1.74	-2.89	-3.71	-3.69	-1.52	-2.93	-1.56
2	-2.68*	-3.83*	-4.29*	-2.98	-2.97*	-3.41*	-2.98	-3.02*
3	-2.09	-2.11	-3.47	-2.62*	-1.47	-1.03	-3.98*	-2.47

Note: * indicates selected lag. Source: Author, computation.

4.3.2 Regression Analysis

(i) Indirect Tax and Real GDP Growth

The impacts of indirect tax on economic growth are captured by considering the coefficients of the explanatory variables in terms of signs and significance.

Table 4.6: Results for tax structure and economic growth

Variable	Coefficient	t-Statistic	Prob.
Long run			
LVAT	0.698	3.221	0.019
LPUD	0.299	0.688	0.503
HDI	14.342	1.075	0.302
Constant	0.986	0.198	0.846
Short run			
Δ LVAT	-0.060	-1.532	0.160
Δ LVAT _{t-1}	0.132	6.124	0.000
Δ LPUD	-0.046	-5.961	0.000
Δ HDI	5.228	9.549	0.000
Δ HDI _{t-1}	2.178	4.747	0.001
ECM _{t-1}	-0.040	-11.798	0.000
Adj. R-sq.	0.896		

Source: Author's computation

VAT, the current coefficient is insignificant at the 5 percent level (p-value is greater than 0.05), while the lagged coefficient is significant and positive also indicating that VAT tends to promote short run economic growth. The other variables in the model also report interesting results. For instance, the coefficient of public debt is negative and significant at the 1 percent level, indicating that public debt has significant negative impact on short run economic growth in Nigeria. This is an indication of debt hangover in the Nigerian economy. The coefficients of HDI both current and lagged forms are positive and significant which show that human development significantly improves economic growth in the long run.

The coefficient of the error correction term (ECM) has the expected negative sign and is significant at the 1 percent level (p-value less than 0.01). This indicates the presence of long run stability in the GDP growth estimate based on movements in the tax and other factors. The coefficient of the ECM term is -0.04, which is very low and suggests slow adjustment to long run equilibrium after any initial shock in the system. The result shows that only 4 percent of the adjustment to long run equilibrium is completed in the first period. Thus, there is evidence that taxes may not be very efficient in achieving rapid long-term GDP adjustment in Nigeria.

The results of the long run estimates are also reported in the upper panel of the result in Table 4.5. It should be noted that the long run estimates report more stable characteristics of the relationships (Stock & Watson, 2020). In the result, the coefficients of VAT pass the significance test at the 5 percent level. This result therefore indicates that VAT has significant long run impacts on economic growth in Nigeria. This result therefore suggests that indirect tax has long run relevance for driving real GDP growth in Nigeria. The coefficients of public debt and HDI fail the significance test even at the 5 percent level. This shows that after all adjustments have been made in the economy, the impacts of debt and human development are insignificant in driving economic growth in Nigeria.

(ii) Indirect Tax and Unemployment

The adjusted R-squares value is 0.812, which shows that the estimated model has an impressive predictive capability. In terms of the individual performance. The coefficient of VAT is positive and

significant at the 5 percent level. These results show that VAT revenues, tend to promote unemployment in the short run. The coefficients of lagged public debt and HDI are however negative and significant, suggesting that rising debt and improved human capital may significantly reduce unemployment in the short run.

Table 4.7: Results for Indirect Tax and unemployment

Variable	Coefficient	t-Statistic	Prob.
<i>Long run</i>			
LVAT	36.68	1.46	0.17
LPUD	-10.02	-0.64	0.53
HDI	833.23	1.01	0.33
Constant	-347.91	-1.07	0.31
<i>Short run</i>			
Δ LVAT	0.612	2.686	0.025
Δ LPUD	-0.023	-0.408	0.693
Δ LPU _{t-1}	-0.133	-2.428	0.038
Δ HDI	11.201	2.539	0.032
Δ HDI _{t-1}	-21.764	-4.787	0.001
ECM _{t-1}	-0.019	-8.086	0.000
Adj. R-sq.	0.812		

Source: Author's computation

The coefficient of the error correction term also has the expected negative signs and is significant in the unemployment equation. The result therefore shows that there is long run adjustment to equilibrium following any short run deviation. The coefficient of the ECM is also very low at -0.019 and it shows that the adjustment to long run equilibrium is slow.

For the long run relationship, the result in the upper panel of Table 4.6. Thus, although tax structure factors tend to influence unemployment by increasing it, the effect of these tax factors after all adjustments have been made is not significant.. This also shows that neither public debt nor human capital development help to reduce unemployment over time in Nigeria.

(iii) Indirect Tax and Inflationary Pressure

. The results of the tax structure and inflation relationship are presented in Table 4.8. The short run results (in the lower panel of the Table) indicates that VAT that significantly influence inflation rate in the short run. While VAT has a positive impact on inflation, rates are increased when VAT rises. The result shows that indirect taxes tend to increase short-term macroeconomic instability in terms of prices. The ECM term is also negative and significant at the 1 percent level. This shows that long run adjustment to equilibrium occurs with changes in the explanatory variables. The adjustment is also swift as shown by the large coefficient of the ECM term, indicating that over 78 percent of the adjustment to long run equilibrium occurs in the first period.

Table 4.8: Results for tax structure and inflation

Variable	Coefficient	t-Statistic	Prob.
Long run			
LVAT	-9.205	-2.512	0.029
LPUD	6.665	2.546	0.027
constant	29.332	0.770	0.457
Short run			
Δ LVAT	6.879	3.912	0.002
Δ LPUD	-0.558	-1.370	0.198
Δ LPUD _{t-1}	-1.918	-4.365	0.001
ECM _{t-1}	-0.781	-25.318	0.000
Adj. R-sq.	0.979		

Source: Author's computation

VAT is significant at 5 percent level. This outcome is similar to that of real GDP growth, which suggests that VAT exert the same pattern of effects on economic growth and inflation rate in Nigeria. From the study we find that indirect taxes are capable of reducing inflationary pressures in Nigeria.

(iv) Indirect tax and Human Development index

From the table below, results of the impacts of indirect tax on the human development index is reported. The model is well estimated with high predictive relevance at adjusted R-squared value of 0.946. The short run result shows that VAT exert significant negative impact on HDI.. The coefficient of ECM term is significant and negative, which shows that a long run stability exists in human capital development in the country with VAT. The speed of long run adjustment is very high, at ECM coefficient of -0.907. This shows that over 90 percent of the adjustment to long run equilibrium is completed in the first period.

Table 4.09: Results for tax structure and human development index

Variable	Coefficient	t-Statistic	Prob.
Long run			
LVAT	0.021	2.354	0.045
LPUD	-0.010	-1.452	0.177
Constant	0.338	9.794	0.000
Short run			
Δ LVAT	-0.032	-5.853	0.000
Δ LPUD	-0.003	-2.134	0.059
Δ LPUD _{t-1}	0.006	5.117	0.001
ECM _{t-1}	-0.907	-13.566	0.000
Adj. R-sq.	0.946		

Source: Author's computation

The coefficients of indirect tax is positively significant at the 5 percent level. This shows that although VAT exert significant negative impacts on human capital development in the short run, the long run impact is positive., indicating that VAT exert significant positive impact on human development in Nigeria. By increasing VAT in Nigeria, human capital tends to increase in the long run.

4.3.3 Analysis of Causality

The results of causality are shown in Table 4.10 where the tests are based on the F-statistic test outcomes for each of the null hypotheses. From the results, the F-statistic values for the null hypothesis that causality does not run from unemployment to GDP growth or reverse are insignificant at the 5 percent level indicating no causality between variables. As noted earlier the lack of causality between economic growth and unemployment can be linked to the “jobless growth” phenomenon that has been explained in literature. The hypothesis that causality does not runs from inflation to GDP growth is rejected at the 5 percent level, meaning that causality runs from inflation to GDP growth. However, the reverse causality does not hold. Hence, there is a unidirectional causality running only from inflation to GDP growth in the economy.

Table 4.10: Granger Causality Results

Null Hypothesis:	Obs	F-Statistic	Prob.	Direction of Causality
UNEM does not Granger Cause LGDP	27	2.09	0.15	
LGDP does not Granger Cause UNEM		1.31	0.29	None
INFL does not Granger Cause LGDP	26	3.88	0.04	
LGDP does not Granger Cause INFL		0.52	0.60	Unidirectional
HDI does not Granger Cause LGDP	26	0.30	0.75	
LGDP does not Granger Cause HDI		12.78	0.00	Unidirectional
LVAT does not Granger Cause LGDP	26	0.16	0.85	
LGDP does not Granger Cause LVAT		11.06	0.00	Unidirectional
INFL does not Granger Cause UNEM	26	3.40	0.04	
UNEM does not Granger Cause INFL		0.67	0.52	Unidirectional
HDI does not Granger Cause UNEM	26	1.24	0.31	
LUNEM does not Granger Cause HDI		0.46	0.64	None
LVAT does not Granger Cause UNEM	26	0.34	0.72	
UNEM does not Granger Cause LVAT		1.63	0.22	None
HDI does not Granger Cause LINFL	26	1.69	0.21	
LINFL does not Granger Cause HDI		2.12	0.14	None
LVAT does not Granger Cause INFL	26	0.06	0.94	
INFL does not Granger Cause LVAT		1.88	0.18	None
LVAT does not Granger Cause HDI	26	6.50	0.01	
HDI does not Granger Cause LVAT		10.32	0.00	Reverse

The causality between HDI and economic growth only runs from HDI to economic growth and not the reverse case. On the other hand, causality runs from real GDP growth to VAT. Thus, the growth is the factors that drives VAT. economic growth stimulates indirect taxes. It is when the economy is in better performance that indirect taxes beginning to expand in Nigeria.

There is also a unidirectional relationship between inflation and unemployment rate, with causality running from inflation rate to unemployment. The only reverse relationships among the variables are between VAT and HDI. These show that while VAT Granger causes HDI and HDI, Granger cause VAT.

4.4 Post Estimation Tests

For robustness of the estimates in the study, we check for multicollinearity, normality and serial correlation. Test result is presented tests are conducted, and the results are presented.

4.4.1 Multicollinearity Tests

The regressors in the models used in the study are numerous with outcomes that may measure the same effects. Multicollinearity tests are therefore conducted on each of the models to ensure that the

explanatory variables are not excessively collinear. Apparently, high collinearity tends to amplify the standard errors of the estimates and render the reliability of the estimated models quite low. In Table 4.13, the results of the multicollinearity test for the each of the model results are presented. In the result, only the centred variance inflation factors (CVIF) variables are reported since each of the equations contains a constant term. The VIF value must be less than 10 for the variable in an equation to be free from collinearity. In the report on Table 4.12, the Centred VIF values for all the variables are less than 10. Thus, it can be seen that the estimated coefficients for the equations do not integrate excessively among themselves and the estimates are therefore reliable.

Table 4.13: Post Estimation Test Results

Variable	Coefficient Variance	Centered VIF
LVAT	0.155	4.150
LPUD	0.021	9.801

Source: Author’s computations

4.4.2 Tests for Stability of Regression

The normality test is conducted using the J-B procedure while the serial correlation tests are performed using the LM statistics. The results for all the estimates are presented in Table 4.13. From the results, none of the J-B and LM statistics passed the significance test even at the 5 percent level which implies that the null hypothesis is accepted in both cases. The null hypothesis is the absence of non-normality and serial correlation respectively. Thus, the tests indicate that the residuals are normally distributed and are devoid of serial correlation. Each of the estimated equations is adjudged stable and effective for long term prediction and analysis. To test the initial stability of cointegration parameters for the estimates, the Nyblom-Hansen (L_c) tests are also included in Table 4.14. The “Nyblom-Hansen statistic tests for parameter constancy against the alternative hypothesis that the parameters follow a random walk process” (Balcilar et al, 2013).. The coefficients are all insignificant at the 5 percent level. Thus, there is a stable long run relationship between tax and reforms and revenues.

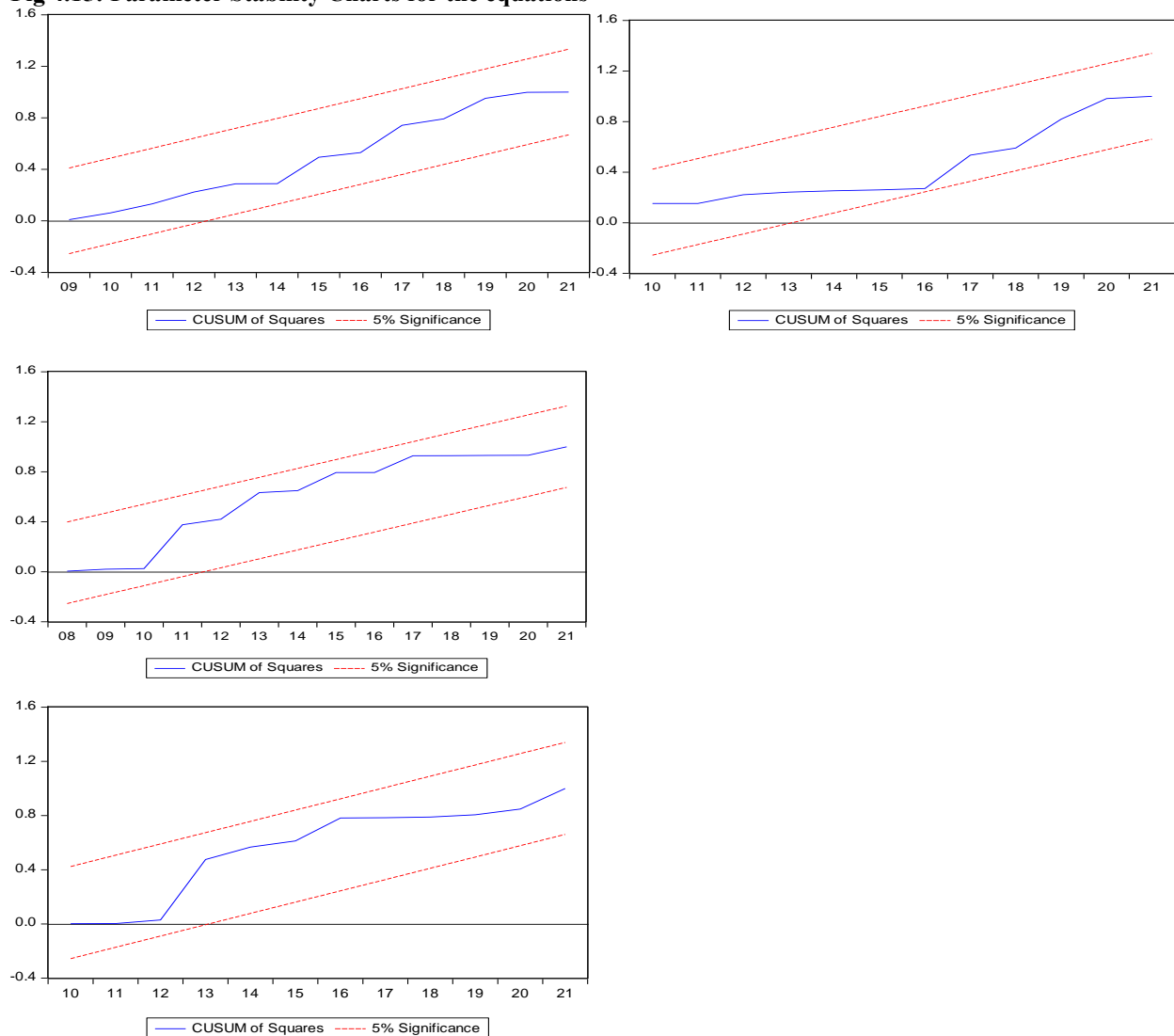
Table 4.14: Post estimation test results

Model	Test	Stat. (prob)
GDP	L_c value (Bootstrap p value)	1.033 (0.611)
	Normality test (J-B)	0.455 (0.79)
	Serial Correlation LM Test	1.121 (0.35)
UNEM	L_c value (Bootstrap p value)	1.14 (0.72)
	Normality test (J-B)	1.301 (0.52)
	Serial Correlation LM Test	0.667 (0.53)
INF	L_c value (Bootstrap p value)	2.00 (0.27)
	Normality test (J-B)	2.295 (0.72)
	Serial Correlation LM Test	0.291 (0.75)
HDI	L_c value (Bootstrap p value)	1.156 (0.37)
	Normality test (J-B)	2.232 (0.33)
	Serial Correlation LM Test	1.218 (0.34)

Note: p-values in parentheses. Source: Author’s computation

A visual test of the stability of the estimates is also conducted using the CUSUM of squares tests. This helps to eliminate doubt about possible outlier regression for any of the groups in the sample. The charts in Figure 4.15 show the result of the CUSUM of squares test for recursiveness of error accumulation for the five categories of revenues that were performed in the study. It can be seen that the CUSUM of squares line lies entirely within the dotted 5 percent significance bound line throughout the chart for each of the charts. This reveals that the estimations are all stable within the analysis and there are no issues of structural breaks or outlier effects in the estimations.

Fig 4.15: Parameter Stability Charts for the equations



Source: Author's computations

4.5 DISCUSSION OF FINDINGS

The results obtained from the empirical analysis of the study highlight particular issues for discussion in terms of policy implications. In the study, it was demonstrated that differentiation of macroeconomic performance variables into five components as well as the differentiation of tax structure components provide more nuanced pattern of analysis in establishing the relationship between taxes and macroeconomic performance in Nigeria. Essentially, it was demonstrated that the macroeconomic performance indicators employed in the empirical analysis of the study can be considered in terms of

overall income levels and welfare as well as in terms of macroeconomic stability. In this direction, while real GDP growth and unemployment identify the direction of income and welfare, inflation rate and exchange rate demonstrate the pattern of macroeconomic stability. These patterns of evaluations are also provided in studies like Arora (2013), Araújo and Cunha (2014), Rajkarnikar, Goodwin and Roach (2019), Aitken (2019) and Quiros-Romero and Reinsdorf (2020) for both developing and developed economies. Thus, in this study, role of overall tax revenue on improving economic performance, welfare improvements and ensuring macroeconomic stability has been well established.

An important outcome of the data analysis in the study is the realization that VAT component components in the study were found to be high in relation to total tax revenues but very low in relation to GDP in the economy. The average value of VAT to total revenue compares favourably with other global outcomes. For instance, VAT accounted for 33 percent of total tax revenue in terms of global average in 2018, while the ratio was 21.2 percent of total tax revenue for the OECD countries (PwC, 2020). The ratio of CIT to GDP was found to be 0.752 on average, while the ratio of VAT to GDP is 0.994. Compared with a tax to GDP ratio of 34.2 percent for OECD economies and 21.3 percent for Latin American economies (Adegboye, Arodoye & Irughe, 2019), The VAT component examined in the study contributed less than 1 percent of total GDP on average over the period, although VAT have maximum values that are greater than 2 percent. This implies that the tax revenues are generally low in the country as also found by IMF (2018), OECD (2020), and AfDB (2020).

Furthermore, the study found evidence of differences in the impacts of taxation on the basis of short run or long run outcomes as well as on the basis of the tax components under consideration. In particular, the effects of tax revenues on macroeconomic performance were demonstrated to clearer in the long run than in the short run. The study therefore found that the effect of tax structure components on macroeconomic performance are long run affairs and may not be fully determined in the short run. Similar findings were made by Gale and Samwick (2014), Chen et al (2017) and Madsen et al (2021).

In the same vein, the study found that indirect taxes improved income levels and inflation rate in Nigeria, This implies that indirect taxes may not be effective in maintaining macroeconomic stability in Nigeria. The study therefore establishes that direct taxes may not deliver macroeconomic effects that are divergent from the Ricardian Equivalence proposition of the tax effects as also shown by Finkelstein and Notowidigdo (2018). Also, increases in indirect taxes tend to produce external effects that do not fully guarantee improvements in macroeconomic in Nigeria. This outcome can be explained by the fact that indirect taxes tend to generate more long-term effects or interactive outcomes. Thus, increasing indirect taxes may generate more than one rounds of effects on welfare and macroeconomic stability and these increased rounds of effects may lead to negative or ineffective outcomes in the economy (Lieber & Lockwood, 2019; Alatas, 2016; Basurto, Dupas & Robinson, 2017).

The study also found that VAT does not significantly influence unemployment rate in Nigeria. The result essentially showed that the reduction of unemployment in Nigeria is not to be attained by changing tax rates, base or overall tax revenues. Similarly, the plague of unemployment in Nigeria is not influenced by indirect tax components in Nigeria. There is therefore evidence that tax-targeted spending may not be targeted at improving employment in the country. Given that taxes are a major component of government spending capacity, the study has found evidence that employment is not a major focus of fiscal policy in Nigeria. In general, taxes and unemployment are a dilemma for government. The main macroeconomic prescription for reducing high unemployment is the reduction of tax rates (Rendahl, 2016; Gehrke, 2018). However, lower tax rates will result in lower tax revenues. Thus, the outcome of this study is in line with previous studies that demonstrated that the effects of indirect taxes on unemployment is ambiguous (Abubakar, 2016; Gehrke, 2018).

CONCLUSION

The objective of the study was to determine the effect of indirect tax (VAT) on economic performance. Based of findings we draw the following conclusions: VAT in the short run short run positively and significant relate with inflation. An increase in VAT increases prices of goods and services and since an

increase in prices of goods and services means a fall in value of money an indication of poor economic performance. We also conclude that there is no significant relationship between value added tax and changes in the prices of goods and services in the long run and that an increase in VAT does not reduce inflation. In the short run a positive significant relationship exist between VAT and unemployment An increase in VAT increases unemployment and since an increase in unemployment is an indication of poor economic performance VAT has a negative economic impact. We also conclude from the study that in the long run there is no significant relationship between value added tax and unemployment. We conclude based on findings that in the short run a negative significant relationship exists between VAT and human development index. An increase in VAT reduces human development in the short run. However, in the long run there is no significant relationship between value added tax and human development index. The current coefficient of VAT is insignificant while the lagged coefficient is significant and positive also indicating that VAT tends to promote short run economic growth.

We conclude VAT have significant long run impact on the economy of Nigeria. Also, we conclude from the study that public debt and human development are insignificant in driving economic growth in Nigeria. VAT has a positive impact on inflation short run changes in inflation rates are increased when VAT rises.in the long. We also conclude from the study that VAT does not address the unemployment problem in Nigeria. VAT exert significant negative impacts on inflation, implying that indirect tax is capable of reducing inflationary pressures in Nigeria. The long run effects of indirect tax increases on HDI are positive

RECOMMENDATION

Government and policy makers should focus on long run strategies during formulation of tax policies. In the short run indirect tax tends to impact inflation, unemployment, human development index . However, the only long run impact is on inflation as it tends to reduce inflation in the long run. If the policy of government is to reduce inflation in the long run increases in indirect tax rates will help in achieving this objective. However, policy makers should be conscious of the detrimental effect this will have in the short run and adopt policies that will favor the populace or serve as mitigants.

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