Effect of Voluntary Assets and Income Declaration Scheme (VAIDS) on Economic Growth of Nigeria

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Abstract
Government in recent time gave attention to tax to enhance economic growth because of the persistent dwindling proceed of oil revenue to the Nigeria economy. To address this gap, the study examined the effect of voluntary assets and income declaration scheme (VAIDs) on economic growth of Nigeria. The study employed expost facto research design using while using macro data for the period 1994 to 2019. The statistical bulletin of the central bank of Nigeria and information from National Bureau of Statistics were sourced and used alongside relevant journals. Descriptive and inferential statistics emplying multiple regressions were adopted in data analysis as the date were already validated by regulators and statutory authorities. Findings from the study revealed that VAIDs proxied by custom and excise duties, company income tax and value added tax) have significant effect on economic growth. (Adj. R2 = 0.51, F (3,21) = 9.211, p< .0.05). The study submitted that VAID was a success programme that contributed significantly to economic growth of the nation. Therefore, to increase participation and continued compliance, mechanisms must be put in place to strengthen the current tax system and also ensure participants comply with their payment of taxes even after the end of the Scheme. While the revenue generating units of the governments are encouraged to do more, the study further recommended that VAID should be a one-off amnesty programme for tax defaulters
Keywords: Company Income Tax, Custom and Excise Duty, Economic Growth, Gross Domestic Product, Value Added Tax, VAID

Introduction
The down trend being experienced in the price of crude oil at the international market had negatively affected the revenue accruing to the Nigeria economy in recent times (Sayi and Lambe, 2019). This persistent dwindling revenue is the reason why government decided to pay more attention to tax revenue with the objective of harnessing its benefits by increasing revenue generation and broadening the tax base of the Nigeria economy especially when tax has been adjudged one of the most reliable sources of revenue available to government.

However, revenue generated from tax has remained very low in Nigeria (OECD, 2018, Oyedele, 2017), despite many reforms to ensure that economic growth is achieved through tax.

This among other reason is why Acting President Prof. Yemi Osibanjo, through executive order 004 in 2017, mandated the federal ministry of finance to set up a Voluntary Assets and Income declaration scheme (VAIDS) to ensure voluntary compliance and amnesty for tax defaulters who are now expected to declare and remit their appropriate tax (Sayi and Lambe, 2019). Other objectives of VAID include; to increase tax to GDP ratio from 6% to 18% by 2020 and expand the Nigeria tax base and improve the capacity to generate more tax revenue for government (Onwuka et al., 2019).

Although Sayi and Lambe (2019) opine that Nigeria government has created opportunity for voluntary tax compliance scheme for quite some time, but studies revealed that the rate at which eligible taxpayers failed to remit their taxes either deliberately or by indulging in tax avoidance is alarming. Nigeria with a population of about 186 million people in 2015 has 77million employed and only 10 million people out of those employed registered for personal income tax across the 36 states and the Federal Capital Territory (Ade, 2018). This explains the reason for the dwindling government revenue and the demotivational effect it has on the few taxpayers who are carrying the burden of the rest eligible tax payer. Table 1 below compares Nigerian tax rate, population, work force and revenue with South Africa.

Table 1

COMPARISON OF TAX DATA	NIGERIA	SOUTH AFRICA
Population (2016)	182.2M (NPC)	55.6M (Stats SA)
Labour force (2016)	79.9M (NBS)	21.8M (Stats SA)
Unemployment rate (2016)	13.9% (NBS)	26.6% (Stats SA)
Registered individual taxpayers	14M (JTB)	19M (SARS)
Top taxpayers paying N10m or more	943 (FGN/JTB)	950,000 (SARS, Derived)
Total tax revenue (all levels)	N6T (NBS)	Derived R1.07T (N27T) (SARS)
Personal income tax revenue (2016)	N802B (NBS)	R390B (N9.7T) (SARS)
Tax to GDP ratio (all taxes)	6% (FGN)	26.2% (SARS)
Personal income tax to GDP ratio	0.8% (Derived)	9.5% (SARS)
Ease of paying taxes ranking (2017) World bank	182nd position out of 190 countries. (W/Bank)	51st position out of 190 (World Bank)

Source: Oyedele, (2017).

With this reality coupled with the fluctuations in the oil market, the introduction of VAIDS became indispensable to ensure the economy attains the desired growth.

A tax system that is so efficient in ensuring taxpayers remit exactly what is due to the relevant tax authority cannot be over emphasized in the attainment of the desire growth and well-being of any country. While underpayment of taxes reduces the amount of fund accruable to the government, overpayment on the other hand places undue burden on the tax payer. South Africa and Kenya are considered the most efficient tax collectors countries in sub-Saharan Africa (Maradze et al., 2020). The significance of tax to governments of many countries is further demonstrated as dedicated tax bodies and institutions are independently

set up for tax collection purposes. This is in addition to the various Acts which provides a road map on how to administer tax efficiently. Tax avoidance and evasion have continue to impact these government efforts negatively by limiting the resources generated through taxation.

Tax avoidance and tax evasion are part of the major problems bedevilling tax administration in Nigeria as studies revealed noticeable gap exists between potential and actual tax collections (Bako, 2021). Although this challenge is not limited to Nigeria but according to Nwachukwu and Okongwu (2019), the impact it has in Nigeria appears to be unique in the sense that, there is no robust tax evasion and avoidance legislation, like it exists in developed countries; to control tax evasion coupled with the lack of qualified administrative tax staff and, consequently our tax authorities.

The federal government of Nigeria has through different policies and pronouncements frowned at the widespread incidence of tax evasion and avoidance in the country with companies and other taxable persons using all kinds of tax loopholes to escape or significantly reduced their taxes. This is besides the deliberate fraudulent ways and refusal to pay tax altogether, sometimes with the collusion with revenue personnel (Nwachukwu and Okongwu, 2019). It is the responsibility of the government through relevant tax authorities to ensure that revenue leakages are reduced where outright blockage seems unattainable. Consequently, a proper legal evaluation of the issue of tax evasion and avoidance in Nigeria and an appreciation of the difference between 'tax evasion' and 'tax avoidance' is a prerequisite because the concepts are sometimes used interchangeably in tax literature.

Tax avoidance and evasion are the two common ways, according to Nwachukwu and Okongwu (2019), tax payers adopt in reducing tax payable. While tax evasion is the willful and unlawful failure to pay one's taxes, Bhuiyan (2012) in contrast, opine that tax avoidance is the reduction of tax payable using legal means in the tax laws.

The federal government of Nigeria has many avenue of generating revenue with the most reliable being income from tax (Chukwuemeka, 2019). However, scholars have revealed that a lot of challenges, besides the increasing social and public spending needed in stimulating economic growth in the country, makes tax less likely to be effective (Onoh et al., 2021). One of the challenges is how to strike a nexus between taxes and levies that will generate enough revenue to the government for public service delivery while at the same time satisfy the qualities of a good tax system and enhance economic growth. Besides, poor tax administration which hinder economic growth, the prevalence of tax evasion and avoidance which pave ways for revenue leakage and falsification of financial records have in no small ways affected economic growth.

The concealment of imported vatable good in different containers and cartons to portrait them as non-vatable and evade custom duties, the falsification of financial statements to reflect what tax payers felt they should declare sometimes in connivance with those saddles with revenue collection. All these practices mitigate against economic growth. The study, therefore, empirically evaluated the effect of voluntary asset and income declaration scheme (VAIDs) on the economic growth of Nigeria.

Literature Review/Theoretical Review
Conceptual Review
Tax
Tax described as a compulsory levy imposed on a taxable persons by a government in order to fund its various public expenditures. An efficient tax system according to Maradze et al

(2020) is a tax that give opportunity for the taxpayer to pay exactly what is due to the relevant government. Adegbie et al (2020) identified tax as one of the most important sources of fund to every economy. Taxes according to Nwauzor (2021) could be used as an influential machinery for economic growth and development as it contributes immensely to the Gross Domestic Product. James and Nobes (1992) opined that taxation is an obligatory tariff by a public authority that nothing is gotten directly as a pay back. This definition is not significantly different from the one given by Anyanwu (1997) which describe tax as an unavoidable contribution, imposed by government and while taxpayers may not collect recognizable item in return for their support, they nonetheless have the value of living in a relatively educated, healthy and safe society. Tax in the opinion of Nwauzor (2021) is the price paid by citizen to facilitate delivery of community goods, rearrangement of revenue including wealth, advancement of societal and monetary welfare, financial stability as well as harmonization. it is a compulsory level by any administration on the income, proceeds, property, and treasure of persons and business entities to enable government obtain needed resources to provide core amenities, provide safety and cater for well-being of the people (Etim et al., 2020).

To ensure an improvement in the collection of taxes without discouraging compliance with relevant tax laws and provisions, the Vice President of Nigeria issued an executive order on Voluntary Income and Assets Declaration (VAIDS) on 30th June 2017, with no penalty, no prosecution of the taxpayers. (Nwauzor, 2021). Voluntary Asset and Income Declaration Scheme (VAIDS) is a form of tax amnesty which gives opportunities to tax payers who were hitherto not complied with laid down provision in filling their tax return to rectify same (Aliyu et al., 2019)

Custom and Excise Duty
Customs and excise duty was introduced and referred to as import duty in 1860 and adjudged one of the oldest forms of modern taxation (Ekeocha et al., 2012). Customs and excise duty is one of the examples of non-oil indirect tax with which have enormously contributed to Nigeria Economy (Adegbie et al., 2020). Adeusi et al (2020) opined that customs and excise duties have been a major revenue source even before the discovering of oil in Nigeria. Its contribution to national development has been significant post oil discovery. Custom duty can be divided into import and export duty. While import duty is a tax paid on goods produced or services rendered abroad but brought into the Nigeria, export duty is a tax levied on good or service produced or rendered in Nigeria but taken to other countries for use or consumption. Excise duties are taxes paid on good produced or services rendered and consumed or enjoyed in Nigeria. Custom duty is one of the tools use in promoting import substitution and export promotion. Although the amount reported to have been collected under custom and excise is marred by corruption Abomaye-Nimenibo et al (2018); Adegbie (2011) is still of the opinion that its contribution towards the development and growth of the Nigerian economy is so strong and reliable.

In attempt to regulate and grow the economy, custom and excise duties are adjusted accordingly. An upward review of custom duty will increase the cost of the item which will be passed to buyers in form of higher prices subject to the elasticity of the product or service. This according to Ekeocha, et al (2012) will shift demand to local products with multiplier effect on employment and ultimately bring about economic growth. Nigeria Custom Services is the cash generating agency of the federal government responsible for the collection of

statutory fees and rates such as all levies so imposed by the Federal Government on imports, exports, excise duties and other tariffs.

Company Income Tax
Companies Income Tax (CIT) is a form of direct tax levied on the profits of companies. It is computed and paid from the taxable profits of incorporated entities under the Companies and Allied Matters Act, 1990 as amended. CIT which is currently charged at 30% is payable on declared profits of any corporate entity accruing in, derived from, brought into or received in Nigeria in respect of any trade or business that may have been carried out (Onoja and Ibrahim, 2019). The only exemption to the payment of 30% CIT is any company engaged in Petroleum exploration activities (Adegbite, 2015). However, Section 23(2) and (3) of the CITA empowers the president to exempt any company or class of companies from all or any of the provisions of the Act, or from tax, on any ground which appears to him sufficient. As companies engage in business activities to make profit, it is also expected that they try as much as possible to be socially responsible to their stakeholders including government as they pay certain percentage of their profit as tax. Government in turns is expected to provide amenities such as electricity, good road network, efficient and effective telecommunication system, among others. This symbotic relationship according to Adegbite (2015) will foster a less hostile business environment to the benefit of the stakeholders.

The administration of CIT rests on the Federal Inland Revenue Service (FIRS). Adegbie, et al (2020) opine that in spite the non-compliance occasioned by weak controls put in place by the government, CIT has been making significant impact on the fund accruing to the government of Nigeria thereby enhancing its growth. The introduction of VAIDs is one of the positive steps taken by government to address the revenue leakage in these areas. It should be noted that profits that are non-crude oil related generated by petroleum companies are liable to company income tax (Onyi-Ogelle and Ekundayo, 2020.

Ani (2014) identify availability of revenue to finance infrastructural projects, equitable distribution of wealth, favourable balance of payment and term of trade and ability to regulate the economy and influence economic growth as part of the objectives of CIT which aid Nigeria economic growth.

Value added Tax (VAT)
VAT which has gained relevance in most countries of the world, Nigeria inclusive (Agbo and Nwadialor, 2020). France adopted VAT in 1954 to replace the turnover tax as members of European Economic Council (EEC) have since 1967 adopted VAT as a kind of tax that generates revenue. VAT is an indirect tax levied on the value additions at different stages of production and forms part of the prices paid for the good or service consumed (Abomaye-Nimenibo et al., 2018).

Izedonmi and Jonathan (2014); Lawrence (2015) opined that Value Added Tax (VAT) as a consumption tax with the major objective of increasing revenue accruable to the government while ensuring funds are also available for developmental purposes thereby enhancing economic growth (Umeora, 2013). In Nigeria, VAT was introduced to replace the sales tax in 1993. Nigeria, a more consuming nation with an estimated population of over 200m stand a chance to harness more revenue for economic growth if attention is paid to VAT especially now that it has moved from 5% to 7.5%. Nwanakwere (2019) opine that VAT is directly proportional to GDP and the consumers are the ultimate payers because as most of them pay

without without taking cognisance of it. Besides, it is easy to administer and collect as cases of avoidance and evasion are very low. VAT which is federally collected indirect tax with a uniform rate of 7.5% was designed to be paid on imported goods, as well as on locally manufactured goods, hotel service, bank transaction while its proceeds are shared 50%, 35% and 15% between State, local and federal government respectively.

VAID

VAIDS is considered a form of tax amnesty which is not new all over the world as it has been adopted with records of positive impact in many countries (Perdiguez, 2019) like South Africa, India, Indonesia among others (Olise and Emeh, 2020). The primary objective of VAID is to encourage voluntary declaration of hitherto undisclosed incomes and assets with consequential payment of applicable tax liabilities (by companies and individuals) to relevant tax authority over a stipulated period of time. Taxes covered under VAID according to Nangih, Idatoru and Kumah (2018) include all taxes collectible by the Federal Inland Revenue Service and State Inland Revenue Service. Asaolu, Akinkoye and Akinadewo (2019) opined that VAIDS can be used in increasing the revenue accrued to the government if challenges such as inability of maintaining a reliable database of eligible taxpayers are addressed in Nigeria tax system. This position was corroborated by Aliyu, et al (2019) as their study concluded that VAIDS has significant effect on tax compliance as it will ensure relevant tax authorities will not work across purpose with one another and taxpayers will use VAID in regularising the anomalies in tax filling. Having faithfully complied with the provision of the executive order on VAID, Nigeria government assured tax payers will be forgiven of their outstanding interest and penalties. Besides this, they won't be subjected to any criminal prosecution nor face tax investigation. Doing this according to Olise and Emeh (2020) will not only increase tax awareness and compliance but also provided an avenue to widen the tax net of Nigerian tax system.

Economic Growth

Economic growth can be described as an increase in the total value of goods and services produced during the year in a country; as growth rate of a country is measured by the size of her Gross Domestic Product (GDP) (Appah, 2010). Tax revenue plays significant role and presents opportunities for promoting economic growth especially if its revenues are invested in projects that have a lasting positive effect on the people. However, this great opportunity of revenue generation has not been fully tapped by most governments around the world (Akintoye and Dada, 2013) especially the developing nations in the sub-Saharan Africa, like Nigeria owing to taxation system; tax laws; tax administration and policy challenges; overdependence on other revenue sources such as grants and aids from the foreign nations and systemic corruption. All these challenges limits economic growth. Adegbie, et al (2020) opine that economic growth will only be noticeable in any nation if population growth is less than increase in total output while Akwe (2014) added that only countries that are creative and productive grow her gross domestic product (GDP) by prioritising employment, reduced interest rate and improved output in the industrial sector. There is high tendencies of improving the size of its GDP which will ultimately transform the economic growth positively when economy is fully engaged with total control of economic variables (David & Anyiwe, 2013).

Theoretical Review
Ability to Pay Theory
The ability to pay theory of taxation was propounded by Smith (1776) when he published a book titled 'the wealth of a nation'. Adams smith work was further made more popular by Cicil Pigou (1877) as the theory was adjusted one of the most acceptable theories of taxation (Yahaya and Kabir, 2019; Adegbie et al., 2020). Ability to pay theory proposition is that contribution to public function should be in accordance to wealth. This theory supports progressive tax system as those who earn more should be made to pay more tax than those on lower income if real economic growth is desirable (Adegbie et al., 2020). Those who have means to pay should pay commensurably compared with the less privileged. The good thing about this theory is that it considers the disparities of income among tax payers and advocates equity. However, it is difficult to measure the ability to pay of a taxpayer especially in an economy line NIGERIA where there is high presence of informal sector (Jhingan, 2014).

Benefits Theory
Wicksell (1896); Lindahl (1919) initially developed the benefit theory which stipulates that government should impose levy on prospective taxpayers based on the benefits they derived from the public good provided by the government (Cooper, 1994). The assumption of this theory is that contract exits relationship between taxpayers and the government. The state provides public goods to the society and the society contribute to the cost of these supplies in proportion to the benefits received. This is noticeable in the CED, CIT and VAT relationship with the economic growth where the amount paid for these taxes is in accordance with the benefits received in the consumptions of the public goods (Yahaya and Kabir, 2019). While taxpayers are obligated to live up to their civic responsibility by prompt payment of their taxes, the proceed is injected into governance for the maintenance of law and order, security of life and property, infrastructural development and other social amenities that are capable of enhancing economic growth.

Socio-Political Theory
The role played by government in ensuring economic growth is achieved in any nation cannot be over emphasized and it is generally portrayed through the choice of their policy (Adeusi, et al., 2020). The Social Political Theory was propounded by Adolph Wagner. The theory advocates that sociopolitical factors should be taking into consideration when taxes are to be selected. Bhartia (2009) opines that the ills in the society should be cured by social political theory as it does not speak for individual approach to arriving at a solution but, rather, economic challenges should be viewed from its social and political context and appropriate solution suggested thereof. The socio-political theory of taxation considers how tax affects the economy rather than being individual. It therefore follows that decision taken at any time should be based on what the government considers to be of necessity and beneficial to the society.

Although this study considers three theories. The ability to pay, benefit and socio-political theory. However, the study is anchored on the ability to pay theory based of the fact that not only that the theory is as old as taxation and generally acceptable, but most importantly, the theory speaks for progressiveness, equity and fairness which are major ingredients of an efficient tax system especially in developing countries like Nigeria.

Empirical Review
Custom and Excise Duty and Economic Growth

Adeusi et al (2020) found that Custom & Excise Duties have more significant positive effect on the Nigerian economic growth in their study titled non-oil revenue and economic growth in Nigeria. The work which drew its sample from the entire population using the census sampling approach adopted secondary source of data collection method as data were retrieved from the Federal Inland Revenue Service Statistical bulletin of 2018 and the National Bureau of Statistics of 2019 for the period 1994-2018. The four specific variables proxy for non-oil revenue are Value Added Tax, Companies Income Tax, Personal Income Tax and Custom & Excise Duties while Gross Domestic Product was used to represent economic growth in Nigeria. The study thereafter recommended simple and transparent tax laws be enacted to regulate the tax regimes in Nigeria.

Onoh et al (2021) examined tax policies and its impact on economic growth in Nigeria between 1981 and 2019 using data extracted from World Bank Data Base: World Developmental Indicators of 2019 and Federal Inland Revenue quarterly publications. The study employed gross fixed capital formation as proxy for economic development in Nigeria, while company income tax, petroleum profit tax and custom and excise duties were adopted as explanatory variables. Findings revealed that customs and excise duties recorded a negative significant impact on economic growth in Nigeria. Thereafter, the study recommended a better workable plan on the part of Nigeria government in the administration and collection of taxes.

The increase in global emphasis on enhancing tax revenues when compared with Gross Domestic Product (GDP) and diversifying revenue sources of nation's economics necessitated Etim, Austine, Nsima and Asogwa (2020) to empirically analize the relationship between tax revenue components and economic growth in Nigeria from 1980 to 2018. Data on GDP and tax revenue were extracted from Central Bank of Nigeria (CBN) statistical Bulletin and Annual Reports of Federal Inland Revenue Service (FIRS) and analysed using descriptive and inferential statistics. The study found a positive and significant relationship between economic growth (GDP) and Personal Income Tax, Petroleum Profit Tax and Company Income Tax while Education Tax, Customs and Excise Duties were not statistically significant. The study thereafter concluded that tax revenue components play vital role in economic growth in Nigeria and recommended that government intervening to boost economic growth through taxation. Also, the study of Nchege et al (2019) revealed that customs and excise duties had a negative impact on economic growth when they examined tax revenue, wage employment and economic growth in Nigeria

CIT and Economic Growth

The effect of tax reforms on the economic growth of Nigeria from 1994 to 2009 was researched by (Ogbonna and Appah, 2016). The study found a significant relationship between company income tax revenue and gross domestic product. The effect of taxation on economic growth from 2007 to 2017 was examined by Ngwoke (2019) using secondary data obtained from the Central Bank of Nigeria Statistical Bulletins. The study found out that CIT has significant effect on the economic growth proxied by gross domestic product of Nigeria. Cornelius, Ogar and Oka (2016) studied the impact of tax revenue on economic growth in Nigeria using ordinary least square and company income tax was found to have no statistically significant impact on economic growth. Also, Yahaya and Kabir (2019) examined the impact

of non-oil tax revenue on economic growth in Nigeria adopting ex-post facto research design. The result of the study revealed that CIT had a positive significant relationship with economic growth.

VAT and Economic Growth
Interestingly, the relationship between Value-Added Tax and Economic Growth has been empirically explored by different scholars, but most of these scholars have not been able to arrive at the same result. These inconsistencies in the various studies have made the gap to remain for further studies. Ajakaiye (1999) advance argument that the dominance of informal sector resulted in the negative relationship when he assessed the influence of value added tax on the economic growth of Nigeria, using the equitable general equilibrum approach. The result of the study conducted by Ugochukwu and Azubike (2016) shows a negative relationship between value- added tax and economic development. Examining the economy of Kenya, Njogu (2015) researched the relationship between value-added tax and economic growth and found a negative and statistically significant relationship between value-added tax and the Kenyan economic growth.

Onwuzulumba and Okpata (2021) study covered the disaggregated effect of tax structure on economic growth in Nigeria using time series data from 1986 to 2019 and adopted Ex-post facto research design. The study which found that Value added tax has significant effects on economic growth in Nigeria recommended that tax administrative loopholes should be plugged for efficiency and effectiveness since main components of tax revenue studies had a significant impact on economic growth. Value Added Tax (VAT) and Economic Growth in Nigeria was investigated by Areem et al (2020) with the objectives of examining the impact of value added tax and economic growth and to determine the causal relationship between value added tax and economic growth in Nigeria using secondary data from Central Bank of Nigeria. The study which revealed that value-added tax positively and significantly impacted on economic growth of Nigeria both in the long-run 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.

An empirical study of China perspective on Value Added Tax and economic growth was researched in China by Ayoub and Mukherjee (2019) using time series of the period from 1985-2016. The test result indicated to have a positive relationship between the GDP and independent variables value-added tax in both in the long and short run. This result is also validated here in Nigeria by (Bank-ola, 2021).

Methodology
This study adopts ex-post facto research design using time series data for the periods of 23 years to examine the effect of Voluntary Income and Asset Declaration Scheme (VAIDS) on the economic growth in Nigeria. The macro data used are: VAIDs which is proxied by Customs and Excise Duties (C&ED), Companies Income Tax (CIT) and Value Added Tax (VAT). The dependent variable is economic growth proxied by Gross Domestic Product (GDP). The secondary data used in this study were obtained from Central Bank of Nigeria (CBN) statistical bulletin, Federal Inland Revenue Service (FIRS), the Nigeria Custom Service (NCS) and United Nations Development Programme (UNDP) reports for the period of 23 years (1996 – 2019)

Model Specification

This study examined the effect of VAIDS on the economic growth in Nigeria. Both the dependent and the independent variables have been identified. The dependent variable is economic growth proxied by gross domestic product (GDP) while the independent variables is VAIDS measured by Custom and Excise Duty (C&ED), Companies Income Tax (CIT) and Valued Added Tax (VAT).

The main functional equation of this study is

Y=F(X) where

Y= dependent variables =economic growth (GDP)

X= VAID= C&ED, CIT and VAT

X= x1, x2, x3

Therefore,

GDP = f(C&ED, CIT and VAT)----------------F1

The models:

$GDP_t = a_0 + \beta_1 C\&ED_t + \beta_2 CIT_t + \beta_3 VAT_t + e_t$ (1)

Where:

Y = economic growth

X = VAID

Y1 = Economic Growth proxied by GDP

X1 = Customs and Excise Duties (C&ED)

X2 = Companies Income Tax (CIT)

X3 = Value Added Tax (VAT)

Where a0 is constant of the function 1

β 1, β2 and β3 are the coefficient of the proxies of independent variables; 'i' represent the number of and 't' represent the number of years covered in the study.

Result, Analysis and Discussion of Findings

Table 1

Descriptive Statistics

	GDP	CET	CIT	VAT
Mean	45636128	417939.6	487658.0	134833.8
Median	30828927	261350.0	260100.0	90510.00
Maximum	1.44E+08	1876584.	1340329.	395114.3
Minimum	1762813.	18294.60	12274.80	2260.800
Std. Dev.	43911406	400506.8	486510.5	129162.4
Skewness	0.766780	1.907178	0.565614	0.532005
Kurtosis	2.332259	7.662618	1.718489	1.882389
Jarque-Bera	3.030827	39.31343	3.165441	2.579603
Probability	0.219717	0.000000	0.205416	0.275325
Observations	26	26	26	26

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Table 1 above shows the descriptive statistics which gives the characteristics of the data series used in the study. The standard deviations of the series are extremely high which means that prediction of the means might somewhat difficult. Skewness and Kurtosis measure the degree of asymmetry of the data series as well as the extent of flatness or otherwise of

dataset. A symmetrical distribution should have a skewness value of zero. It is asymmetric where the skewness value is greater than zero as depicted in table 1 above where the entire data series are positively skewed.

Kurtosis assists in detecting the existence of outliers in the data distribution, that is whether the data is heavy or light tailed in a normal distribution. Kurtosis value is 3 for a normal distribution, while it is leptokurtic when the value is greater than 3 as indicated in the case of CET and platykurtic when the value is less than 3 as reflected in the case of other variables.

Based on the Jarque-Bera statistics and its probability values, all the variables are normally distributed except CET. This could be due to the nature of the revenue from this source taking into the consideration that the country is import dependent not only for consumer goods import but also for raw materials required for industrial production.

Table 2
Correlation Matrix

Correlation					
Probability	GDP	CET	CIT	VAT	
GDP	1.000000				

CET	0.889737	1.000000			
	0.0000	-----			
CIT	0.977142	0.820760	1.000000		
	0.0000	0.0000	-----		
VAT	0.991050	0.866073	0.980722	1.000000	
	0.0000	0.0000	0.0000	-----	

Author's compilation: EViews 12

In table 2, the correlation matrix is presented and indicates extremely high positive association among the variables used in the study. The relationship among the variables are not just positive but also statistically significant.

Stationarity/Unit Root Test
Stationarity or unit root test to examine the time series properties of the variables is essential otherwise, regression result from non-stationary time series data suffers from spurious regression problem (see Bai & Perron 1998; 2003) thereby making study output unsuitable for policy prescription. For this reason, both Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) were employed ascertain the order of integration of the variables as shown below.

Table 3
Unit Root Test Result

	Augmented Dickey Fuller (ADF)			Phillips-Perron (PP)		
Variables	**Level**	**1st Difference**	**Status**	**Level**	**1st Difference**	**Status**
LCET	-2.3531 (0.1644)	-6.4660*** (0.0000)	I(1)	-2.2750 (0.1872)	-14.6446*** (0.0000)	I(1)
LCIT	-2.3974 (0.1523)	-5.3621*** (0.0000)	I(1)	-2.2928* (0.0893)	-5.3302*** (0.0002)	I(1)
LGDP	-3.5757** (0.0140)	N/A	I(0)	-3.3069** (0.0254)	N/A	I(0)
LVAT	-2.4541 (0.1382)	-7.6184*** (0.000)	I(1)	-6.2027 (0.0000)	N/A	I(0)

Note: ***, **, * denote 1%; 5% and 10% levels respectively
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Since all the variables are of mixed order of integration, that is order zero, I(0) and order one, I(1) suggest long run relationship, we proceed to use Autoregressive Distributed Lag (ARDL) because of the advantages over other cointegration methods. The ARDL method has three main advantages; firstly, compared to other multivariate co-integration methods, the bound test is a simple technique because it allows the co-integration relationship to be estimated by OLS once the lag order of the model is identified. Secondly, the unit root test is not a pre-condition of this model. It is only necessary to ensure that none of the variables being examined is integrated of order two that is, I(2). Thirdly, the long-run and short-run parameters of the model can be estimated concurrently.

Table 4
Results of Bound Test Statistics for Cointegrating Relationship

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Significant level	I(0)	I(1)
F-statistic	4.781555	10%	2.72	3.77
k	3	5%	3.23	4.35
		2.5%	3.69	4.89
		1%	4.29	5.61

Author's compilation: EViews 12

Cointegration is inferred if the F-statistics is greater than I(0) and I(1) bound at the chosen critical level 5%, thus leading to the rejection of the null hypothesis of no levels relationship. Consequent upon the results of bounds test conducted with the F-statistic of 4.7815 which is greater than both the lower and upper bounds of 3.23 and 4.35 respectively, we therefore reject the null hypothesis of no long run relationship among the variables. Upon confirmation of the cointegrating relationship, the long-run impact of VAIDs on economic growth is estimated and the results of the estimation are presented in Table 5 below:

Table 5
Result of Long Run Relationship of ARDL Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LCET	0.235480	0.090493	2.602203	0.0186**
LCIT	-0.415827	0.433878	-0.958395	0.3513
LVAT	0.999686	0.356376	2.805142	0.0122**

*Note: ***, **, * denote 1%; 5% and 10% levels respectively*
Author's compilation: EViews 12

Table 5 contains the results of long run estimation which is expressed in equation as follows:
$$LGDP = 0.235LCET - 0.4158LCIT + 0.999LVAT$$

The results reveal existence of positive relationship between economic growth proxied by gross domestic product and customs and excise tax revenue. It means that a percentage increase in custom and excise tax revenue will lead to 0.235 percent increase in economic growth. Similarly, a strong and positive relationship is observed between economic growth and value added tax, meaning that a percentage increase in value added tax would cause economic growth to rise by 0.999 percent. These two revenue sources exhibit significant positive effect on economic growth.

In contrast, there is a negative relationship between company income tax and economic growth as shown by the results of our estimation. A percentage increase in company income tax would a cause a decrease of 0.416 percent in economic growth. This result indicates that company income tax has no significant impact on economic growth in Nigeria.

Table 6
Result of Short Run Relationship of ARDL Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.601106	0.518702	5.014641	0.0001
D(LVAT)	0.063945	0.050178	1.274378	0.2197
D(LVAT(-1))	-0.093716	0.062650	-1.495871	0.1530
CointEq(-1)*	-0.296297	0.062463	-4.743568	0.0002
R-squared	0.580124	Mean dependent var		0.162842
Adjusted R-squared	0.517142	S.D. dependent var		0.072741
S.E. of regression	0.050546	Akaike info criterion		-2.980837
Sum squared resid	0.051099	Schwarz criterion		-2.784494
Log likelihood	39.77004	Hannan-Quinn criter.		-2.928747
F-statistic	9.211031	Durbin-Watson stat		2.222579
Prob(F-statistic)	0.000495			

*Note: ***, **, * denote 1%; 5% and 10% levels respectively*
Author's compilation: EViews 12

The short run relationship is shown in table 6 above. It implies that none of the variables in the study has significant short run relationship with economic growth. However, the error correction term that reveal the speed of adjustment to long run equilibrium is correctly signed, that is, negative (-) meaning that any deviation in the short run would be corrected at

an adjustment speed of 29.6 percent. This is statistically significant at 1%. The significance of error correction term provides further evidence of long run relationship among the variables.

We went further to conduct diagnostic test of our analysis and the results are presented in Table 7 as shown below.

Table 7
Result of Diagnostic Test

Tests	Statistics	Prob. Value	Remarks
Normality – JB	2.6515	0.2656	Normality
Serial correlation	2.0275	0.1662	No Serial correlation
Heteroskedasticity	1.2529	0.3293	Homoskedastic

The post estimation test captured by Jarque-Bera, Ramsey reset test Breusch-Godfrey, ARCH Heteroskedasticity among others on regression, reveal not only the robustness of the estimated equation results but the desired properties of an econometric model. The diagnostic tests confirm the suitability of the estimated models. Thus, the model residual series are normally distributed as suggested by the Jarque–Bera statistics, while the Breusch–Godfrey LM test statistics indicate that the model does not have significant serial correlation problem.

Findings from empirical results existence of short and long run relationship between value added tax and economic growth. The adjustment to long run equilibrium in the event of a shock occurs that a speed of 29.6% which is significant at 1%. Empirical results indicate that custom and excise tax revenue as well as value added tax have significant positive influence on economic growth.

Findings and Discussions
Influence of VAIDs on Economic growth
Findings showed a positive relationship between Customs and Excise Duties and Economic growth for the period considered for this study. It means that a percentage increase in custom and excise tax revenue will lead to 0.235 percent increase in economic growth. This implies that Customs and Excise Duties have contributed significantly to the Nation's Gross Domestic Products (GDP). This finding confirmed the study of Adegbie, et al (2020) which concluded that custom and excise duties has significant effect on GDP and Adeusi, et al (2020) However, this findings contradicts the study conducted by Nchege, et al (2019); Onoh (2021) which submitted that customs and excise duties recorded a negative significant impact on economic growth in Nigeria.

Like Customs and Excise Duties and Economic growth, VAT also exhibit a strong and positive relationship between economic growth and value added tax, meaning that a percentage increase in value added tax would cause economic growth to rise by 0.999 percent. This finding validate the study conducted by Onwuzulumba and Okpata (2021); Adegbie, et al (2020); Areem, et al (2020) which concluded that value-added tax positively and significantly impacted on economic growth of Nigeria both in short and the long run. Ayoub and Mukherjee (2019); Bank-Ola (2021) also share this view. However, (Ugochukwu and Azubike, 2016)

Companies Income Tax (CIT) showed a significant negative relationship with Economic Growth proxied by (GDP). This suggests that Companies Income Tax does not contribute

significantly to the growth of Nigeria's GDP during the period considered. This finding corroborates the work of Cornelius et al (2016) which confirm that company income tax was has no statistically significant impact on economic growth. Contrary to this finding, the following researchers discovered that (CIT) showed a significant positive relationship with (Economic Growth Adegbie, et al., 2020; Yahaya and Kabir, 2019; Ngwoke, 2019; Ogbonna and Appah, 2016).

Conclusion and Recommendations

1. VAID was a success and government should focus on using the information gathered to increase the tax base and extend tax enforcement to the current VAIDS participants. Information relating to taxpayers which would be gathered should not only be concentrated on financial information, but also that of behavioural with a view to have a better understanding of the reasons for tax evasion.

2. To increase participation and continued compliance, taxpayers must be aware that the government has verifiable means of catching up with defaulting taxpayers. Thus, existing enforcement mechanisms must be strengthened or revamped where necessary to ensure that current taxpayers remain compliant and VAIDS participants comply with their payment of taxes even after the end of the Scheme.

3. Tax amnesty such as VAID should be a one-off event as much as possible. It not to be introduced too frequently. Furthermore, government should also address the issues of trust, transparency and accountability among public officers to encourage voluntary tax compliance by citizens/residents while the underlying infrastructural deficit issues affecting economic and general well-being of the taxpayers are taken care of.

Recommendations

1. Nigeria Customs Service should be encouraged to do more in terms of revenue generation. While the bad eggs among them are shown the way out, constant surveillance of the Nigeria borders should be maintained. Efforts should be put in place to digitalize the various channels through which revenues are being remitted while not compliance is sanctioned.

2. Government through the Federal Inland Revenue Service and other revenue generating ministry department and agencies (MDA) should sustain the commitment towards improved revenue collection. The introduction of VAIDs, TIN and Tax Amnesty) in the light of unfolding business environment so as to capture more taxpayers into the tax net and to harness new tax areas. Also, tax official should be trained from time to time to enable them take on company tax adviser on issues that involve high degree of technicalities.

3. Government should put more efforts and control on the non-oil revenue generation of the economy to generate the necessary foreign exchange needed to boost the economy of the country which will impact on the life of every citizen.

4. Government should ensure appropriate penalties melted on tax-related offenders so that it serves as deterrent for others.

5. Government should recognise and possibly reward individuals and corporate bodies who genuinely comply with the provisions of the enabling tax laws in their remittances.

Contribution to Knowledge

The study provides relevant tax authorities, government agencies and parastatals with input needed to formulate policies that will enhance the implementation of voluntary assets and income declaration scheme (VAIDs) and other tax amnesty programme in Nigeria. Besides, it is significant to research as it contributes to the effect of voluntary assets and income declaration scheme (VAIDs) on economic growth of Nigeria. Although this study is anchored on the ability to pay theory. Not only because this theory is as old as taxation and generally acceptable, but most importantly, the theory speaks for progressiveness, equity and fairness which are major ingredients of an efficient tax system.

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APPENDIX
Dependent Variable: LGDP
Method: ARDL
Date: 01/14/22 Time: 21:15
Sample (adjusted): 1996 2019
Included observations: 24 after adjustments
Maximum dependent lags: 2 (Automatic selection)
Model selection method: Akaike info criterion (AIC)
Dynamic regressors (2 lags, automatic): LCET LCIT LVAT
Fixed regressors: C

Number of models evalulated: 54
Selected Model: ARDL(1, 0, 0, 2)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LGDP(-1)	0.703703	0.115693	6.082479	0.0000
LCET	0.069772	0.032196	2.167074	0.0447
LCIT	-0.123208	0.101874	-1.209418	0.2431
LVAT	0.063945	0.083152	0.769014	0.4524
LVAT(-1)	0.138543	0.073497	1.885022	0.0766
LVAT(-2)	0.093716	0.072233	1.297408	0.2118
C	2.601106	0.743109	3.500303	0.0027

R-squared	0.998485	Mean dependent var		17.15934
Adjusted R-squared	0.997951	S.D. dependent var		1.211089
S.E. of regression	0.054825	Akaike info criterion		-2.730837
Sum squared resid	0.051099	Schwarz criterion		-2.387238
Log likelihood	39.77004	Hannan-Quinn criter.		-2.639680
F-statistic	1867.706	Durbin-Watson stat		2.222579
Prob(F-statistic)	0.000000			

*Note: p-values and any subsequent tests do not account for model selection.

ARDL Long Run Form and Bounds Test
Dependent Variable: D(LGDP)
Selected Model: ARDL(1, 0, 0, 2)
Case 3: Unrestricted Constant and No Trend
Date: 01/14/22   Time: 21:17
Sample: 1994 2019
Included observations: 24

Conditional Error Correction Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.601106	0.743109	3.500303	0.0027
LGDP(-1)*	-0.296297	0.115693	-2.561052	0.0202
LCET**	0.069772	0.032196	2.167074	0.0447
LCIT**	-0.123208	0.101874	-1.209418	0.2431
LVAT(-1)	0.296204	0.095739	3.093866	0.0066
D(LVAT)	0.063945	0.083152	0.769014	0.4524
D(LVAT(-1))	-0.093716	0.072233	-1.297408	0.2118

 * p-value incompatible with t-Bounds distribution.
** Variable interpreted as Z = Z(-1) + D(Z).

Levels Equation

Case 3: Unrestricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LCET	0.235480	0.090493	2.602203	0.0186
LCIT	-0.415827	0.433878	-0.958395	0.3513
LVAT	0.999686	0.356376	2.805142	0.0122

EC = LGDP - (0.2355*LCET -0.4158*LCIT + 0.9997*LVAT)

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	4.781555	10%	2.72	3.77
k	3	5%	3.23	4.35
		2.5%	3.69	4.89
		1%	4.29	5.61
			Finite Sample: n=35	
Actual Sample Size	24			
		10%	2.958	4.1
		5%	3.615	4.913
		1%	5.198	6.845
			Finite Sample: n=30	
		10%	3.008	4.15
		5%	3.71	5.018
		1%	5.333	7.063

t-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-2.561052	10%	-2.57	-3.46
		5%	-2.86	-3.78
		2.5%	-3.13	-4.05
		1%	-3.43	-4.37

ARDL Error Correction Regression
Dependent Variable: D(LGDP)
Selected Model: ARDL(1, 0, 0, 2)
Case 3: Unrestricted Constant and No Trend

Date: 01/14/22   Time: 21:19
Sample: 1994 2019
Included observations: 24

ECM Regression
Case 3: Unrestricted Constant and No Trend

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2.601106	0.518702	5.014641	0.0001
D(LVAT)	0.063945	0.050178	1.274378	0.2197
D(LVAT(-1))	-0.093716	0.062650	-1.495871	0.1530
CointEq(-1)*	-0.296297	0.062463	-4.743568	0.0002

R-squared	0.580124	Mean dependent var		0.162842
Adjusted R-squared	0.517142	S.D. dependent var		0.072741
S.E. of regression	0.050546	Akaike info criterion		-2.980837
Sum squared resid	0.051099	Schwarz criterion		-2.784494
Log likelihood	39.77004	Hannan-Quinn criter.		-2.928747
F-statistic	9.211031	Durbin-Watson stat		2.222579
Prob(F-statistic)	0.000495			

* p-value incompatible with t-Bounds distribution.

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
F-statistic	4.781555	10%	2.72	3.77
k	3	5%	3.23	4.35
		2.5%	3.69	4.89
		1%	4.29	5.61

t-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
t-statistic	-4.743568	10%	-2.57	-3.46
		5%	-2.86	-3.78
		2.5%	-3.13	-4.05
		1%	-3.43	-4.37
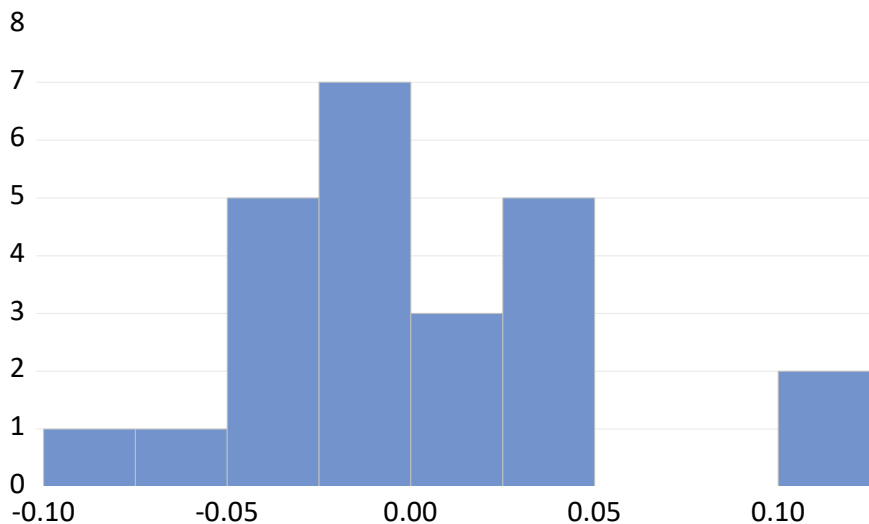
Series: Residuals	
Sample 1996 2019	
Observations 24	
Mean	-3.87e-15
Median	-0.012919
Maximum	0.110752
Minimum	-0.083349
Std. Dev.	0.047135
Skewness	0.786578
Kurtosis	3.420322
Jarque-Bera	2.651489
Probability	0.265605

Breusch-Godfrey Serial Correlation LM Test:
Null hypothesis: No serial correlation at up to 2 lags

F-statistic	2.027484	Prob. F(2,15)	0.1662
Obs*R-squared	5.107289	Prob. Chi-Square(2)	0.0778

Test Equation:
Dependent Variable: RESID
Method: ARDL
Date: 01/14/22   Time: 21:27
Sample: 1996 2019
Included observations: 24
Presample missing value lagged residuals set to zero.

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGDP(-1)	-0.017030	0.110901	-0.153557	0.8800
LCET	0.004124	0.033001	0.124975	0.9022
LCIT	0.030811	0.107533	0.286521	0.7784
LVAT	-0.001375	0.102948	-0.013357	0.9895
LVAT(-1)	-0.071065	0.078695	-0.903037	0.3808
LVAT(-2)	0.052829	0.078183	0.675713	0.5095
C	0.080741	0.731292	0.110409	0.9135
RESID(-1)	-0.035308	0.346043	-0.102034	0.9201
RESID(-2)	0.552225	0.293519	1.881394	0.0795

R-squared	0.212804	Mean dependent var		-3.87E-15
Adjusted R-squared	-0.207034	S.D. dependent var		0.047135
S.E. of regression	0.051785	Akaike info criterion		-2.803448
Sum squared resid	0.040225	Schwarz criterion		-2.361677
Log likelihood	42.64137	Hannan-Quinn criter.		-2.686246
F-statistic	0.506871	Durbin-Watson stat		1.800020
Prob(F-statistic)	0.833016			

Heteroskedasticity Test: Breusch-Pagan-Godfrey
Null hypothesis: Homoskedasticity

F-statistic	1.252888	Prob. F(6,17)	0.3293
Obs*R-squared	7.358707	Prob. Chi-Square(6)	0.2889
Scaled explained SS	4.468070	Prob. Chi-Square(6)	0.6136

Test Equation:
Dependent Variable: RESID^2
Method: Least Squares
Date: 01/14/22   Time: 21:28
Sample: 1996 2019
Included observations: 24

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.036861	0.044420	0.829830	0.4181
LGDP(-1)	-0.000355	0.006916	-0.051397	0.9596
LCET	-0.003058	0.001925	-1.588686	0.1306
LCIT	0.001561	0.006090	0.256340	0.8008
LVAT	-0.008609	0.004970	-1.731952	0.1014
LVAT(-1)	0.006724	0.004393	1.530612	0.1443
LVAT(-2)	0.001202	0.004318	0.278271	0.7842
R-squared	0.306613	Mean dependent var		0.002129
Adjusted R-squared	0.061888	S.D. dependent var		0.003384
S.E. of regression	0.003277	Akaike info criterion		-8.365150
Sum squared resid	0.000183	Schwarz criterion		-8.021551
Log likelihood	107.3818	Hannan-Quinn criter.		-8.273993
F-statistic	1.252888	Durbin-Watson stat		1.945824
Prob(F-statistic)	0.329336			
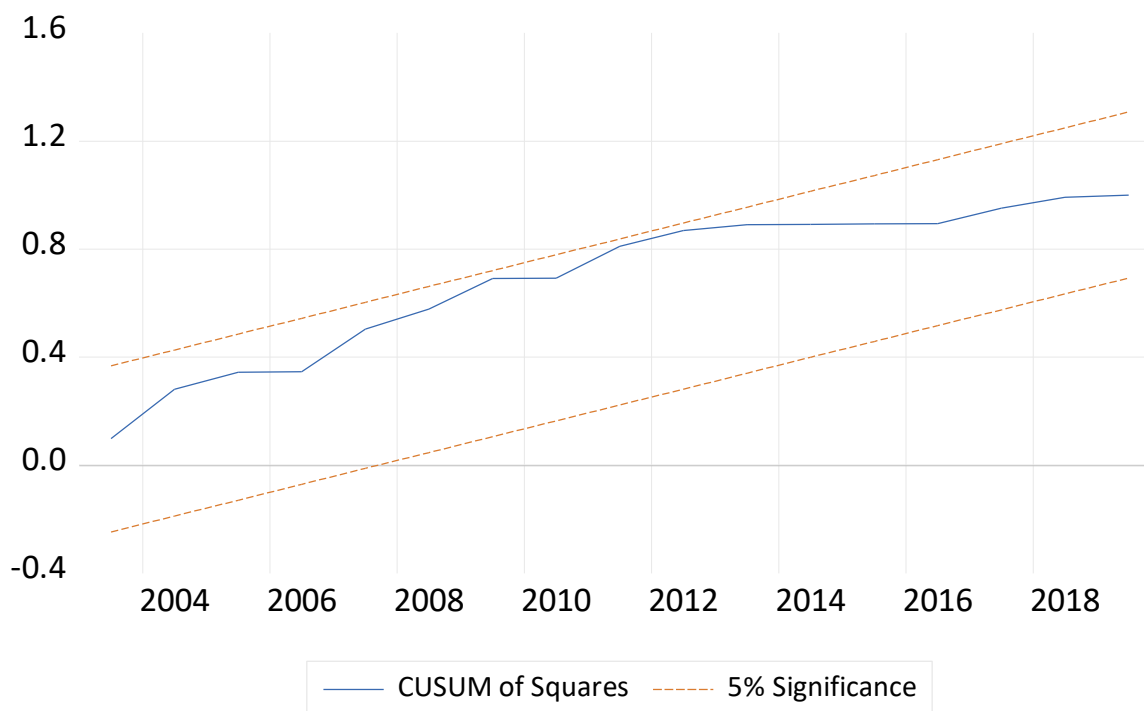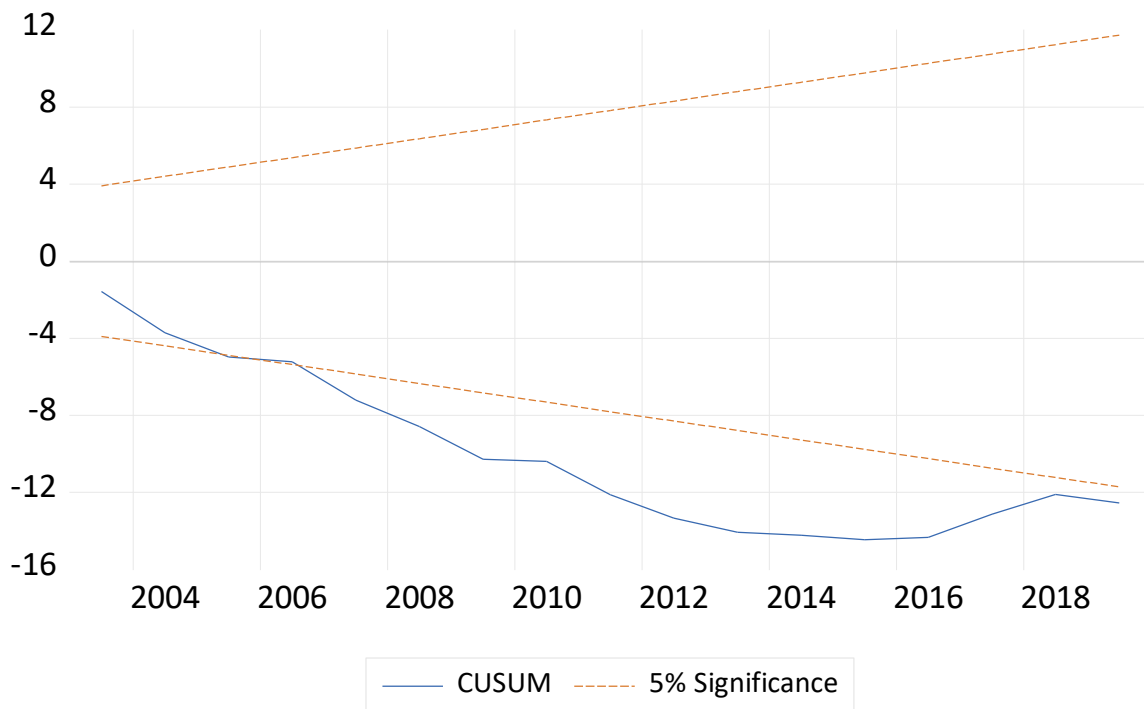
Ramsey RESET Test
Equation: UNTITLED
Omitted Variables: Squares of fitted values
Specification: LGDP LGDP(-1) LCET LCIT LVAT LVAT(-1) LVAT(-2) C

	Value	df	Probability

t-statistic	2.387215	16	0.0297
F-statistic	5.698796	(1, 16)	0.0297
Likelihood ratio	7.312034	1	0.0068

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.013420	1	0.013420
Restricted SSR	0.051099	17	0.003006
Unrestricted SSR	0.037679	16	0.002355

LR test summary:

|	Value
Restricted LogL	39.77004
Unrestricted LogL	43.42606

Unrestricted Test Equation:
Dependent Variable: LGDP
Method: Least Squares
Date: 01/14/22   Time: 21:30
Sample: 1996 2019
Included observations: 24

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGDP(-1)	2.033577	0.566416	3.590256	0.0024
LCET	0.164124	0.048727	3.368270	0.0039
LCIT	-0.279303	0.111384	-2.507558	0.0233
LVAT	0.007502	0.077305	0.097049	0.9239
LVAT(-1)	0.293086	0.091777	3.193458	0.0057
LVAT(-2)	0.187134	0.074961	2.496427	0.0238
C	-8.269952	4.601123	-1.797377	0.0912
FITTED^2	-0.044129	0.018486	-2.387215	0.0297

R-squared	0.998883	Mean dependent var	17.15934
Adjusted R-squared	0.998394	S.D. dependent var	1.211089
S.E. of regression	0.048527	Akaike info criterion	-2.952171
Sum squared resid	0.037679	Schwarz criterion	-2.559487
Log likelihood	43.42606	Hannan-Quinn criter.	-2.847992
F-statistic	2044.191	Durbin-Watson stat	2.807592
Prob(F-statistic)	0.000000		

Null Hypothesis: LCET has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-2.353127	0.1644

Test critical values:	1% level	-3.724070
	5% level	-2.986225
	10% level	-2.632604

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LCET)
Method: Least Squares
Date: 01/14/22   Time: 20:18
Sample (adjusted): 1995 2019
Included observations: 25 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LCET(-1)	-0.310768	0.132066	-2.353127	0.0275
C	4.035615	1.641904	2.457887	0.0219

R-squared	0.194035	Mean dependent var		0.185224
Adjusted R-squared	0.158993	S.D. dependent var		0.739896
S.E. of regression	0.678532	Akaike info criterion		2.138849
Sum squared resid	10.58934	Schwarz criterion		2.236359
Log likelihood	-24.73562	Hannan-Quinn criter.		2.165894
F-statistic	5.537209	Durbin-Watson stat		2.313969
Prob(F-statistic)	0.027539			

Null Hypothesis: D(LCET) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=5)

	t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic	-6.466031	0.0000
Test critical values: 1% level	-3.737853	
5% level	-2.991878	
10% level	-2.635542	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LCET,2)
Method: Least Squares
Date: 01/14/22   Time: 20:19
Sample (adjusted): 1996 2019
Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LCET(-1))	-1.312130	0.202927	-6.466031	0.0000
C	0.213632	0.151806	1.407269	0.1733

R-squared	0.655224	Mean dependent var		0.001575
Adjusted R-squared	0.639552	S.D. dependent var		1.209468
S.E. of regression	0.726132	Akaike info criterion		2.277485
Sum squared resid	11.59989	Schwarz criterion		2.375657
Log likelihood	-25.32983	Hannan-Quinn criter.		2.303530
F-statistic	41.80955	Durbin-Watson stat		1.798165
Prob(F-statistic)	0.000002			

Null Hypothesis: LCET has a unit root
Exogenous: Constant
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.275069	0.1872
Test critical values:	1% level	-3.724070	
	5% level	-2.986225	
	10% level	-2.632604	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.423574
HAC corrected variance (Bartlett kernel)	0.336723

Phillips-Perron Test Equation
Dependent Variable: D(LCET)
Method: Least Squares
Date: 01/14/22   Time: 20:21
Sample (adjusted): 1995 2019
Included observations: 25 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LCET(-1)	-0.310768	0.132066	-2.353127	0.0275
C	4.035615	1.641904	2.457887	0.0219

R-squared	0.194035	Mean dependent var		0.185224
Adjusted R-squared	0.158993	S.D. dependent var		0.739896
S.E. of regression	0.678532	Akaike info criterion		2.138849
Sum squared resid	10.58934	Schwarz criterion		2.236359
Log likelihood	-24.73562	Hannan-Quinn criter.		2.165894
F-statistic	5.537209	Durbin-Watson stat		2.313969
Prob(F-statistic)	0.027539			

Null Hypothesis: D(LCET) has a unit root
Exogenous: Constant
Bandwidth: 23 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-14.65462	0.0000
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)		0.483329
HAC corrected variance (Bartlett kernel)		0.042371

Phillips-Perron Test Equation
Dependent Variable: D(LCET,2)
Method: Least Squares
Date: 01/14/22   Time: 20:24
Sample (adjusted): 1996 2019
Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LCET(-1))	-1.312130	0.202927	-6.466031	0.0000
C	0.213632	0.151806	1.407269	0.1733

R-squared	0.655224	Mean dependent var	0.001575
Adjusted R-squared	0.639552	S.D. dependent var	1.209468
S.E. of regression	0.726132	Akaike info criterion	2.277485
Sum squared resid	11.59989	Schwarz criterion	2.375657
Log likelihood	-25.32983	Hannan-Quinn criter.	2.303530
F-statistic	41.80955	Durbin-Watson stat	1.798165
Prob(F-statistic)	0.000002		

Null Hypothesis: LCIT has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.397990	0.1523
Test critical values:	1% level	-3.724070	
	5% level	-2.986225	
	10% level	-2.632604	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LCIT)
Method: Least Squares
Date: 01/14/22   Time: 20:26
Sample (adjusted): 1995 2019

Included observations: 25 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LCIT(-1)	-0.052232	0.021782	-2.397990	0.0250
C	0.821720	0.267557	3.071195	0.0054
R-squared	0.200010	Mean dependent var		0.184956
Adjusted R-squared	0.165228	S.D. dependent var		0.179420
S.E. of regression	0.163929	Akaike info criterion		-0.702153
Sum squared resid	0.618070	Schwarz criterion		-0.604643
Log likelihood	10.77691	Hannan-Quinn criter.		-0.675107
F-statistic	5.750355	Durbin-Watson stat		2.160373
Prob(F-statistic)	0.024994			

Null Hypothesis: D(LCIT) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.362084	0.0002
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LCIT,2)
Method: Least Squares
Date: 01/14/22   Time: 20:28
Sample (adjusted): 1996 2019
Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LCIT(-1))	-1.062280	0.198109	-5.362084	0.0000
C	0.180760	0.051518	3.508652	0.0020
R-squared	0.566519	Mean dependent var		-0.026965
Adjusted R-squared	0.546815	S.D. dependent var		0.247146
S.E. of regression	0.166376	Akaike info criterion		-0.669473
Sum squared resid	0.608984	Schwarz criterion		-0.571302
Log likelihood	10.03368	Hannan-Quinn criter.		-0.643428
F-statistic	28.75194	Durbin-Watson stat		1.675783
Prob(F-statistic)	0.000022			

Null Hypothesis: LCIT has a unit root

Exogenous: Constant
Bandwidth: 3 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-2.692819	0.0893
Test critical values:	1% level	-3.724070	
	5% level	-2.986225	
	10% level	-2.632604	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.024723
HAC corrected variance (Bartlett kernel)	0.018555

Phillips-Perron Test Equation
Dependent Variable: D(LCIT)
Method: Least Squares
Date: 01/14/22   Time: 20:30
Sample (adjusted): 1995 2019
Included observations: 25 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LCIT(-1)	-0.052232	0.021782	-2.397990	0.0250
C	0.821720	0.267557	3.071195	0.0054
R-squared	0.200010	Mean dependent var	0.184956
Adjusted R-squared	0.165228	S.D. dependent var	0.179420
S.E. of regression	0.163929	Akaike info criterion	-0.702153
Sum squared resid	0.618070	Schwarz criterion	-0.604643
Log likelihood	10.77691	Hannan-Quinn criter.	-0.675107
F-statistic	5.750355	Durbin-Watson stat	2.160373
Prob(F-statistic)	0.024994		

Null Hypothesis: D(LCIT) has a unit root
Exogenous: Constant
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-5.330234	0.0002
Test critical values:	1% level	-3.737853	
	5% level	-2.991878	
	10% level	-2.635542	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.025374

HAC corrected variance (Bartlett kernel)	0.027845

Phillips-Perron Test Equation
Dependent Variable: D(LCIT,2)
Method: Least Squares
Date: 01/14/22   Time: 20:37
Sample (adjusted): 1996 2019
Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LCIT(-1))	-1.062280	0.198109	-5.362084	0.0000
C	0.180760	0.051518	3.508652	0.0020

R-squared	0.566519	Mean dependent var	-0.026965
Adjusted R-squared	0.546815	S.D. dependent var	0.247146
S.E. of regression	0.166376	Akaike info criterion	-0.669473
Sum squared resid	0.608984	Schwarz criterion	-0.571302
Log likelihood	10.03368	Hannan-Quinn criter.	-0.643428
F-statistic	28.75194	Durbin-Watson stat	1.675783
Prob(F-statistic)	0.000022		

Null Hypothesis: LGDP has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.575698	0.0140
Test critical values:	1% level	-3.724070	
	5% level	-2.986225	
	10% level	-2.632604	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LGDP)
Method: Least Squares
Date: 01/14/22   Time: 20:39
Sample (adjusted): 1995 2019
Included observations: 25 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGDP(-1)	-0.043963	0.012295	-3.575698	0.0016
C	0.918792	0.208298	4.410947	0.0002

R-squared	0.357284	Mean dependent var	0.176175
Adjusted R-squared	0.329340	S.D. dependent var	0.097542
S.E. of regression	0.079881	Akaike info criterion	-2.139943

Sum squared resid	0.146762	Schwarz criterion	-2.042433
Log likelihood	28.74929	Hannan-Quinn criter.	-2.112898
F-statistic	12.78562	Durbin-Watson stat	1.322297
Prob(F-statistic)	0.001603		

Null Hypothesis: LGDP has a unit root
Exogenous: Constant
Bandwidth: 1 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-3.306902	0.0254
Test critical values:	1% level	-3.724070	
	5% level	-2.986225	
	10% level	-2.632604	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.005870
HAC corrected variance (Bartlett kernel)	0.006970

Phillips-Perron Test Equation
Dependent Variable: D(LGDP)
Method: Least Squares
Date: 01/14/22   Time: 20:40
Sample (adjusted): 1995 2019
Included observations: 25 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGDP(-1)	-0.043963	0.012295	-3.575698	0.0016
C	0.918792	0.208298	4.410947	0.0002

R-squared	0.357284	Mean dependent var	0.176175
Adjusted R-squared	0.329340	S.D. dependent var	0.097542
S.E. of regression	0.079881	Akaike info criterion	-2.139943
Sum squared resid	0.146762	Schwarz criterion	-2.042433
Log likelihood	28.74929	Hannan-Quinn criter.	-2.112898
F-statistic	12.78562	Durbin-Watson stat	1.322297
Prob(F-statistic)	0.001603		

Null Hypothesis: LVAT has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*

Augmented Dickey-Fuller test statistic			-2.454062	0.1382
Test critical values:	1% level		-3.724070	
	5% level		-2.986225	
	10% level		-2.632604	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LVAT)
Method: Least Squares
Date: 01/14/22   Time: 20:42
Sample (adjusted): 1995 2019
Included observations: 25 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LVAT(-1)	-0.063332	0.025807	-2.454062	0.0221
C	0.895000	0.283578	3.156098	0.0044

R-squared	0.207509	Mean dependent var		0.206538
Adjusted R-squared	0.173053	S.D. dependent var		0.227637
S.E. of regression	0.207005	Akaike info criterion		-0.235529
Sum squared resid	0.985575	Schwarz criterion		-0.138019
Log likelihood	4.944109	Hannan-Quinn criter.		-0.208484
F-statistic	6.022423	Durbin-Watson stat		2.855540
Prob(F-statistic)	0.022118			

Null Hypothesis: D(LVAT) has a unit root
Exogenous: Constant, Linear Trend
Lag Length: 0 (Automatic - based on SIC, maxlag=5)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-7.618435	0.0000
Test critical values:	1% level	-4.394309	
	5% level	-3.612199	
	10% level	-3.243079	

*MacKinnon (1996) one-sided p-values.
Augmented Dickey-Fuller Test Equation
Dependent Variable: D(LVAT,2)
Method: Least Squares
Date: 01/14/22   Time: 20:45
Sample (adjusted): 1996 2019
Included observations: 24 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LVAT(-1))	-1.464014	0.192167	-7.618435	0.0000

C	0.536796	0.114837	4.674430	0.0001
@TREND("1994")	-0.017939	0.006274	-2.859337	0.0094

R-squared	0.734476	Mean dependent var	-0.015740
Adjusted R-squared	0.709188	S.D. dependent var	0.361299
S.E. of regression	0.194837	Akaike info criterion	-0.316833
Sum squared resid	0.797195	Schwarz criterion	-0.169576
Log likelihood	6.801998	Hannan-Quinn criter.	-0.277766
F-statistic	29.04443	Durbin-Watson stat	2.153965
Prob(F-statistic)	0.000001		

Null Hypothesis: LVAT has a unit root
Exogenous: Constant
Bandwidth: 17 (Newey-West automatic) using Bartlett kernel

		Adj. t-Stat	Prob.*
Phillips-Perron test statistic		-6.202692	0.0000
Test critical values:	1% level	-3.724070	
	5% level	-2.986225	
	10% level	-2.632604	

*MacKinnon (1996) one-sided p-values.

Residual variance (no correction)	0.039423
HAC corrected variance (Bartlett kernel)	0.004883

Phillips-Perron Test Equation
Dependent Variable: D(LVAT)
Method: Least Squares
Date: 01/14/22   Time: 20:46
Sample (adjusted): 1995 2019
Included observations: 25 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LVAT(-1)	-0.063332	0.025807	-2.454062	0.0221
C	0.895000	0.283578	3.156098	0.0044

R-squared	0.207509	Mean dependent var	0.206538
Adjusted R-squared	0.173053	S.D. dependent var	0.227637
S.E. of regression	0.207005	Akaike info criterion	-0.235529
Sum squared resid	0.985575	Schwarz criterion	-0.138019
Log likelihood	4.944109	Hannan-Quinn criter.	-0.208484
F-statistic	6.022423	Durbin-Watson stat	2.855540
Prob(F-statistic)	0.022118		