

PROBLEMS OF TAX COLLECTION AND ITS EFFECT ON GROSS DOMESTIC PRODUCT IN NIGERIA

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Abstract

Worried about the problem of tax evasion in revenue generation of government of Nigeria, this paper seeks to empirically investigate the dynamic relationship between tax evasion and economic growth. The datasets are sourced from Federal Inland Revenue Service and Central Bank of Nigeria from first quarter of 2011 to second quarter of 2018. The Philip-Perron unit root tests are applied to determine order of integration. The differences in the order of integration were further analyzed with Dynamic Ordinary Least Square (DOLS) and Granger Causality to determine the effect of a dynamic relationship between variables of tax evasion and gross domestic product. The evidence reveals that the relationship between previous values of petroleum profit tax losses to government are inverse and insignificantly related to GDP. Findings also show that GDP marginally increases with a single unit increase in the size of corporate and stamp duty tax liabilities concealed from the authorities. Further evidence confirms a unidirectional causality running from GDP to corporate tax evasion. In the same way, causality runs from corporate tax evasion to stamp duty tax losses. We conclude that two opposing effects of tax evasion exist. Ceteris paribus tax evasion exerts different effects depending on the components in the tax structure and the magnitude of the concealed tax burden. Finally, the study suggest that periodic appraisal of the tax system should be encouraged since losses on petroleum profit tax evasion exerts negative effects on economic growth. Moreover it is suggested that during appraisal the individual tax rates might be considered and amended where necessary to encourage investments in the oil sector which is the bane of the economy to support the current output level.

Keywords: Economic Growth, Revenue, Tax Evasion, Tax Liability, Tax Collection, Gross Domestic Product, Tax Effect, Stamp duty, Tax burden, Petroleum Profit Tax, Tax rate, Output level

Introduction

Operating a robust economy is the objective of every government both in the developing and already developed countries. This perhaps in many resource constrained countries, is a fundamental vision of every successive government both in the sub-Saharan region and Africa in general. As a means to this end, Nigeria applies fiscal discipline in limited resources management to keep alive its vision of jump-starting and complete actualization of sustainable development as soon as possible. But for practical reasons economic growth is the foundation of development which is an advanced phase in national economy. Imperatively the process of economic development is a series of successive stages of economic growth which all countries must pass (Rostow, 1955). Because of the relevance of economic growth in every nation, this concept has been perceived differently by several authors. Essentially, Chigbu and Eze (2012) argues that economic growth is the increase in the market value of goods and services produced per head of the population over a period of time. We must suffice it to mention that growth is numerically quantifiable. Economic growth concept implies annual increase of material production expressed in value, the rate of growth of GDP or national income (Ivic, 2015). We adopt this as our working definition. Therefore, economic growth is fundamentally a step toward development, but quantitatively combines with other structural changes. Economies with sophisticated productivity facilitates better living of people including those at the very bottom in a defined area (Rodrik, 2007) through higher levels of real per capita income often generated from employment of productive factors. There have been series of models of growth as phases to development. Beginning from Rostow's linear stages-of-growth model, it is advocated that transition from underdevelopment to development follows definite stages through which every country must navigate. Implicit in this theory is that Nigeria is left behind in the race for developmental transformation, or at best, sub-Saharan countries are still at *precondition* stage. As the case with developed countries, Nigeria must strategically comply with certain set of rules of development to takeoff into self-sustaining economic growth. According to Todaro and Smith, (2015p.2) it is strongly believed that creativity of the population holds the key to economic growth of any nation. One of the strategies vital for any takeoff is the mobilization of domestic and foreign resources to generate self-sufficient investments for economic growth acceleration.

The emphasis on savings mobilization required in taking the first step is suggested in the insightful discussions of Harrod-Domar variant of growth model. Harrod-Domar growth model presents a functional economic relationship in which the rate of growth in gross domestic product depends directly on national net savings and inversely on capital output ratio (Todaro and Smith, 2015p.120). The different analytical models imply that attainment of sustained economic growth is of national priority. On this basis several literatures have made economic growth an imperative objective, discussed both in the past (Harrod, 1948; Solow, 1956; Boskin, 1988; Helliwell and Putnam, 1995) and recently (Acemoglu,2012; Onakoya and Afintini, 2016; Ironkwe and Agu, 2019; Omodero, 2019a) on the nature and factors of economic growth. Economic growth is the most powerful instrument for survival of any nation, reducing poverty, and improving the quality of life therein.

Nevertheless, economic growth starts with the accumulation of long-term physical assets to foster and support current level of production in every sector. The requisite assets are accumulated through a sustained programmes expressed as capital formation policy of a country. Capital formation is the acquisition of basic long-term physical assets needed for further production of goods and services. In the literature, the relevance of capital in an economy's building process is often referred to as *capital fundamentalism*. The stages of growth and development of countries follow the course of available capital. The government supervises and invests capital to improve on current level of output. However, the quantum of capital needed by the government to bring about change from current subsistence economy to modern and innovative method has been a serious challenge. The fiscal revenue centers are sourced from taxable adults' income, properties and any other class of economic assets. By law the government imposes taxes on persons to mobilize capital through internal sources.

Taxation is the most important fiscal instrument the government uses to generate revenue necessary for provision of public services. Jit Bahadur (2018) asserts that taxation is a primary tool to raise the revenue required by the government to finance its public expenditure responsibilities. The Nigerian government imposes taxes on petroleum profits, company income, stamp duties, capital gains, personal income, gas income and excise duties. These suffer the brunt of taxation at

varying rates either as progressive or proportionate system of taxation. In spite of the different sources of tax revenue to government, often the targeted capital has proven to be consistently inadequate in carrying out developmental programmes. Several studies have been performed to analyze the economic implication of tax losses in the past (Allingham and Sandmo, 1972; Clotfelter, 1983; Alm, Bahl and Murray, 1990) and currently (Omodero, 2019b; Ironkwe and Agu, 2019). In Nigeria and everywhere tax payment is a civic obligation imposed on the citizens to support government's financial needs.

1.2 Statement of the Problem

A large number of developing countries are struggling to achieve sustained growth in per capita incomes and productivity (United Nations, 2019). This challenge in some instances is a matter of severe capital constraints of a national government. Capital constraint is an expression of a significant fiscal gap between the actual and targeted revenues of the Federal Government of Nigeria. As it is known in developing countries, the gap exists as financial losses of government to taxpayers stemming from operating poorly developed tax systems. The losses take two principal forms aimed at reducing tax liabilities incident on taxpayers. One is of self-discipline, the other is of criminal intention. Without any infringement to the law, government losses tax revenue through tax avoidance. Tax avoidance is any legal activity that lowers taxes, such as worker substitution between wage and nonwage compensation (Alm, Bahl and Murray, 1990). A taxpayer may decide to by-pass some of indirect taxation by avoiding consumption of goods with value added tax (VAT). Tax evasion is the second but most illegal method of tax revenue losses. In the opinion of Jit Bahadur (2018), tax evasion is both illegal and unethical as it decreases government revenue and hinders overall economic development. Tax evasion is the deliberate decrease and manipulation of tax liabilities by illegal means, such as underreporting income on tax returns.

Tax evasion and avoidance contribute immensely to falling revenue. Federal Inland Revenue Service (FIRS) has produced large estimates of tax losses. In the first quarter of 2018 actual petroleum tax collection was ₦644.7751 billion against set target of ₦666.5046 billion naira. In the same quarter gas income tax was to generate ₦ 59.6152 billion but non was received by the revenue agency. The government also lost 48.8 per cent of company income tax in the first quarter

of 2018. Actual target from other sources such as stamp duties remained at variance from their original targets fixed by the revenue body.

We know little ways in which tax evasion occurs in the economy and their economic effects, although there are several empirical works linking tax evasion to different consequences (Cerqueti and Coppier, 2009; Alm, 2011) worldwide, when individuals deliberately fail to comply with their tax obligations. Resulting tax revenue loss may cause serious damage to the proper functioning of the public sector, threatening its capacity to finance its basic expenses (Franzoni, 1999). We are also aware that reasons abound concerning noncompliance of taxpayers. One of the reasons is based on benefit theory. Benefit theory argues that companies and individuals pay taxes because of public services provided by the government which the users enjoy on cost free basis. Where benefit received deviates widely from actual tax contribution by enterprises and the workforce, noncompliance and eventual losses could be recorded. Thus, this has been a widely accepted explanation of the reasons for tax payment resistance. Tax structure and marginal rates are also partly the secondary factors attributed to regular declines in tax revenue.

The existing empirical literatures have had different opinions and findings as regards avoidance and evasion. For instance, Franzoni (1999) studies tax evasion as a relation to institutional procedural rules. Omodero (2019) studies observed that financial and economic implication of government tax losses are influenced by operations in the underground economy. Ouma (2019) argues that government control of corruption effect on tax revenue was less significant, it promotes economic growth more than revenue. Findings and study methods of empirical studies have been quite contradictory in the existing body of literatures thus this marks the point of departure of this study. Furthermore, evidence of tax evasion on growth in a developing economy of Nigeria is still scanty which is still the heart of fiscal discussions. Against this backdrop we provide new evidence on problem of tax evasion and economic growth on quarterly basis using dynamic model. It is the purpose of this paper to examine the consequence of tax evasion as an issue within the tax structure, specifically on economic growth. In this study gross domestic product is a proxy for economic growth measured on output basis.

The second section of this paper reviews previous theoretical and empirical works on tax evasion. Section 3 explains the method to be adopted in analyses of the data. But first the data on tax evasion will be computed as a gap between actual and targeted sum of tax collections in quarterly periods. Section 4 presents estimates based on analyses of econometrics using individual data from petroleum profit tax, company income tax and stamp duties. Section 5 applies the estimates in discussion of findings and conclusion.

2 Previous Research on tax Evasion and Theory

Tax evasion is attached to and analyzed interdependently with other concepts. Underground and shadow economy are often used interchangeably with tax evasion. In the underground economy legitimate goods are produced but for lack of effective documentation via official sources, the gains in the underground economy are seen to be concealed from tax officers. Omodero (2019) argues that Underground economic activities have remained a prevalent universal economic scenario and are even more predominant in the developing countries where they are regarded as the major means of sustenance for the masses. underground economy in Nigeria currently accounts for about 65 percent of the Nominal GDP with agriculture having almost 92 percent share of the informal sector (International Monetary Fund, 2017). According to Eurostat (2005) underground economic undertakings are legal and productive but are consciously hidden from the public authorities to avoid complying with regulations and to deliberately evade the payment of taxes.

A shadow economy includes all economic activities that contribute to the officially calculated gross national (or domestic) product but are not included in these accounts. According to Schneider (2005) shadow economy are all market-based legal production of goods and services that are deliberately concealed from public authorities to avoid payment of income, value added or other taxes, to avoid payment of social security contributions, to avoid certain legal labor market standards (e.g., minimum wages, safety standards), or to avoid certain administrative procedures. Alm (2011) views a shadow economy to be a market-based unreported income from the production of legal goods and services, either from monetary or barter transactions, which would normally be taxable if they were reported to the tax authorities. Alm (2012) argues that a fundamental difficulty in analyzing tax evasion is the lack of reliable information on taxpayer conformity to tax authority.

After all, tax evasion is illegal, and individuals have strong incentives to conceal their cheating, considering the fact that both financial and non-financial penalties are imposed on individuals who are found wanting on payment of taxes.

The interplay of underground economy and shadow economy which have emerged in the informal sector facilitates tax evasion where taxpayers apply conscious measures to conceal the worth of their tax liabilities. Evasion is a matter of an individual's personal decision. In Allingham and Sandmo (1972) portfolio model of tax evasion centers on economics of crime. In the theory, an individual contemplating default makes rational comparison with a view to maximizing the expected utility of gambling with tax evasion, weighing the benefits of successful cheating against the risky prospect of detection and punishment, and the individual pays taxes because he or she is afraid of getting caught and penalized if he or she does not report all taxable income. In this regard Attila (2011) links tax evasion to corruption. The theoretical model ends up arguing that individuals pay taxes because of fear the of detection and punishment. Other theories have emerged to explain tax evasion as would be discussed.

2.1 Expected Utility Theory

The theory states that choices are coherently and consistently made by weighing outcomes (gains or losses) of actions (alternatives) by their probabilities (with pay offs assumed to be independent of probabilities) and that selection favors the alternative which has the maximum utility. Similarly, expected utility theory predicts a preference for dominant alternatives such that the alternatives which produce greater utility will always be chosen over those which provide less utility. The theory assumes that decision makers seek to be aware of multiple outcomes and are able to sift through the complexities of problems to determine clearly a dominant prospect (Sebora, and Cornwall, 1995). Thus, individuals who participate in tax evasion act rationally mostly in shadow economy domain are interested in maximizing their expected benefit from their activities. This theory was applied by Sanji and Ahal-Nowaihi (2006) in a study to provide explanations on why people evade tax. According to authors the tax payer will choose to evade taxes if the expected return per pound on evading the tax is positive.

2.2 Endogenous Growth Theory

Endogenous growth theory explains long-run growth as emanating from economic activities that create new technological knowledge. Endogenous growth stems from internal self-developments in the economy. Endogenous growth is long-run economic growth at a rate determined by forces that are internal to the economic system, particularly those forces governing the opportunities and incentives to create technological knowledge. It exists as a direct opposite to Solow-Swan exogenous model of growth which stresses that growth is influenced by external economic variables (Solow, 1956). According to Aghion and Howit (1992) in the long run the rate of economic growth, as measured by the growth rate of output per person, depends on the growth rate of total factor productivity (TFP), which is determined in turn by the rate of technological progress. Endogenous growth theory challenges this neoclassical view by proposing channels through which the rate of technological progress, and hence the long-run rate of economic growth, can be influenced by economic factors. It starts from the observation that technological progress takes place through innovations, in the form of new products, processes and markets, many of which are the result of economic activities. For example, because firms learn from experience how to produce more efficiently, a higher pace of economic activity can raise the pace of process innovation by giving firms more production experience.

2.3 Empirical Reviews

Several authors have examined tax evasion and its implications. In Nigeria Onyeka and Nwankwo (2016) adopted ex post facto design in examining impact of tax evasion and avoidance on the economy of Nigeria. Ordinary Least Square (OLS) analytical technique was applied to analyze time series data spanning from 1999-2012. Results suggests that tax evasion and avoidance have adverse significance on the growth of the Nigerian economy. Saidu and Dauda (2014) in a Bauchi State case study analyzed the operation of the informal sector in the state. The authors employed primary and secondary data which were analyzed with spearman rank order correlation test in order to test the relationship between ethics of tax evasion and performance of government and the rho, to evaluate the relationship. The study confirmed that even though it is good to pay tax, taxpayers refuse to, due to bad governance and other factors such as religious, political and socio cultural and high level of illiteracy of the citizenry.

In other developing economies within the sub-Saharan sub-region and beyond mixed findings have been presented. For instance, in Ghana Ameyaw *et al.* (2015) conducted an investigation into the

effect of personal income tax evasion on economic growth in Ghana. Using regression analysis method was used to analyze 109 respondents to questionnaire and 44 tax authorities in the Tema metropolitan assembly. Result on personal income tax evasion depicts adverse effects on socio-economic development in Ghana. Sookram and Watson (2005) expressed two main objectives. The first objective was to determine the extent of tax evasion in Trinidad and Tobago during the period 1960-2000. This was done using estimates of the hidden economy based on a variant of Tanzi (2017) monetary model. The second objective was to determine if, and to what extent, any relationship exists between certain key macroeconomic variables and the level of income tax evasion in Trinidad and Tobago. The bounds testing procedure to co-integration within an autoregressive distributive lag (ARDL) framework is used to address the issue. The study established a long-run relationship between tax evasion, per capita economic growth, imports, external debt, unemployment and inflation.

Hassan and Schneider (2016) in a study examined tax evasion based on shadow economy and developed countries economic growth. It was found that tax evasion does not significantly relate to macro economy growth. Alstadaester, Johannesen and Zucman (2018) studied tax evasion and tax avoidance using rich administrative data in Norway. To ascertain and discover assets held abroad by the wealthy people in the government. Findings showed that taxes paid by wealthy individuals with foreign assets rise 30 per cent at the time of disclosure and that the rise is sustained over time. Alstadaester and Jacob (2013) examine the role of tax incentives and tax awareness on tax evasion using Swedish administrative panel data running from year 2006-2009. The results revealed that some observed reporting could be in accident, while others are deliberate tax evasion. The authors also identified a positive and significant relationship between tax rate and evasion.

Section 3. Analytical Methods and Model Specification

Measurement of tax evasion has been under intense controversy and even appears in research questions. In the discussions of Alm (2011) several methods were cited ranging from traditional to modern methods. In the traditional method a direct process is adopted by revenue agencies such as line-by-line tax audit of company statements and individual tax returns. Tax audits yielded FIRS estimate of the taxpayers' *true* income, which when compared to actual reported items allowed the FIRS to calculate measures of income tax evasion. Our measurement method is identification of *tax gap* between actual revenue collection and targeted amount reported by

Federal Inland Revenue Service's Planning, Reporting and Statistics Department. We assume that tax gap is caused by evasion on the part of taxpayers or corrupt tax officials. The span of the historical series covers from first quarter of year 2011 to second quarter of 2018. We further assume that the evasion is occasionally from simple mistakes in judgment or calculation which in practice is honest errors made from setting higher targets above the normal threshold.

The tax gap is collected on petroleum profit tax, company income tax and stamp duties. Petroleum profit tax is charged at 85 per cent of total assessable profit of oil prospecting, production and development multinational enterprises in the energy sector. by the rate this contributes the largest share of tax related revenue of Nigeria. company income tax is charged at 30 per cent of gross income after deductions of tax allowable expenditures. Stamp duties tax is collected on instruments defined to include every written document.

The dependent variable is gross domestic product (GDP) which is a proxy for economic growth and also measure of national income accounting. The changes in tax evasion proxies are expected to predict changes in gross domestic product.

3.1 Stationarity test

Research on time series variables requires that data be stationary or free from unit root. A unit root implies that mean of the distribution is statistically different from zero. based on a system equation we apply Philip-Perron unit root. Philip-Perron (PP), unit root tests are performed on each series to determine their order of integration. PP does not operate on the basis of optimal lag length selection because it is a non-parametric test, where the ADF fails PP is a better confirmatory test in series analyses. PP does heteroskedasticity and autocorrelation consistency (HAC) correction to DF test statistics. It is also sensitive to structural breaks among series. Results from unit root tests would determine the procedure to be employed to estimate the Nigeria tax evasion and growth relationships.

$$y_t = \partial_1 y_{t-1} + \partial_2 \Delta y_{t-1} + \partial_3 \Delta y_{t-2} + \varepsilon_t \quad (1)$$

Where;

Δ means change in the value of the variables over time; y_{t-1} lagged value of variables in one period; $\partial_1 - \partial_3$ coefficients, ε_t is a stochastic random walk.

Model specification of Dynamic Ordinary Least Square (DOLS)

We would apply DOLS approach as suggested by Camacho-Gutierrez (2010). This is suitable if all series are integrated of order 0, then ordinary least squares procedure (OLS) may be used; in contrast, if series are unit root non-stationary, then OLS would render a spurious regression, hence we would employ dynamic OLS. Pradhan Mallik and Bagchi (2018) assert that where the data is stationary dynamic ordinary least square (DOLS) is applied to estimate a dynamic relationship between the datasets. DOLS uses a parametric adjustment to the errors by augmenting the static regression with leads, lags, and contemporaneous values of the regressor in first differences. The functional relationship between the predictor variables and dependent variables are expressed in linear equation as follows:

$$GDP = f(PPT, CIT, SDT) \quad (2)$$

Where; GDP is gross domestic product. PPT represents petroleum profit tax gap from evasion CIT means company income tax gap; SDT stamp duty tax gap. A linear dynamic model expresses the relationship between the variables as:

$$GDP_t = \beta_{01} + \beta_{11} GDP_{t-1} + \beta_{21} PPT_{t-1} + \beta_{31} CIT_{t-1} + \beta_{41} SDT_{t-1} + \varepsilon_t \quad (3)$$

$$PPT_t = \beta_{02} + \beta_{12} GDP_{t-1} + \beta_{22} PPT_{t-1} + \beta_{32} CIT_{t-1} + \beta_{42} SDT_{t-1} + \varepsilon_t \quad (4)$$

$$CIT_t = \beta_{03} + \beta_{13} GDP_{t-1} + \beta_{23} PPT_{t-1} + \beta_{33} CIT_{t-1} + \beta_{43} SDT_{t-1} + \varepsilon_t \quad (5)$$

$$SDT_t = \beta_{04} + \beta_{14} GDP_{t-1} + \beta_{24} PPT_{t-1} + \beta_{34} CIT_{t-1} + \beta_{44} SDT_{t-1} + \varepsilon_t \quad (6)$$

where: β_0 - β_4 is parametric constants others are as expressed in equations (1) and (2). We expect each of these to impact negatively on growth as evidenced in Jit Bahadur (2018) empirical studies in Nepal, *a priori* expectation is technically noted as $\beta_1, \beta_2, \beta_3 < 0$. Against this background, we accept the view that tax corruption reduces growth more than the distortionary effect of taxation alone.

3.2 Multivariate Granger Causality test

We would further adopt multivariate dynamic equilibrium model using granger causality to predict effects of changes in the past on future values of variables within itself or as relationship to changes in other variables. According to Granger, (1969) a variable causes a variable if this variable can be predicted with greater accuracy by using past values of a variable while all the other terms remain unchanged. Therefore, the pairwise Granger causality test if used would ascertain if one variable Granger – causes the other and the direction of the causality.

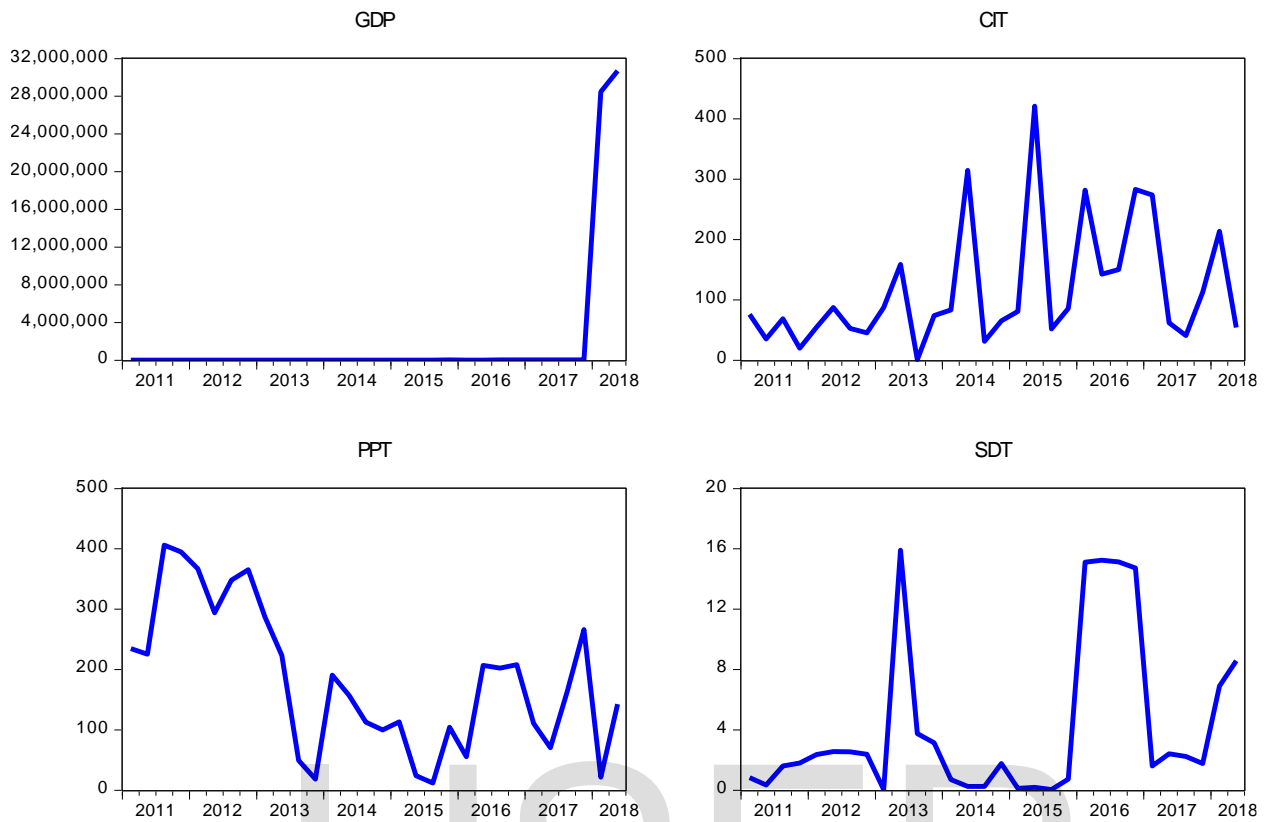
3.3 Model fitness tests and Diagnostics

Heteroskedasticity and Autocorrelation consistency test are for model diagnostics and fitness. We would apply white heteroskedasticity test and LM-serial correlation to test for autocorrelation and heteroskedasticity in the series.

Section 4. Empirical Findings

Figure 1 Graphical Description of the Data

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The objective of this graphical description is to observe presence of jumps existing in observations. In checking for the behavior of the datasets we apply line graphs descriptive illustration. In figure 1 the line graphs follow trends suggesting non stationarity over the selected study horizon. Stamp duty was at the peak in second quarter of 2013. Gross domestic product exhibits low trends from the origin until the third quarter of 2017 since then it has consistently increased. The absence of displacement of each line graphs from a zero level and back again implies that the stochastic process be eliminated to avoid spurious regression. Thus, a confirmatory descriptive statistics test for normality and asymmetry of the series, unit root series is converted to stationary dataset with Phillip-Perron at 5 per cent level of significance. Without controlling for unit root OLS produces biased and misleading parameter estimates.

Table 1: Descriptive summaries for the study variable

Variable	Mean	Std. Dev	Skewness	kurtosis	JB	p-value
CIT	4.356171	1.104868	-1.777449	8.823196	58.18364	0.00000
GDP	10.46637	1.841663	3.405031	12.77728	177.4652	0.00000
PPT	4.880578	0.967573	-1.024426	3.148347	5.274747	0.071549
SDT	0.446558	1.668344	-0.501788	2.629318	1.430715	0.489017

Source: author's

Table 1 is summary statistics which shows distribution of historical series. As a rule of thumb data are required to be normally distributed without trend and asymmetry but with minimum dispersion. Observe that mean of company income tax evaded and GDP are 4.3561 and 10.46637 which are different from zero. Although standard deviations of 1.104 and 1.842 shows a minimum deviation of observation from the sample mean of CIT and GDP. At p-value of 0.0000 the null is rejected because both series are not normally distributed, however we accept the null of Stamp duty at 0.489017 to be normally distributed. Coefficient of kurtosis at 3.1483 indicates presence of higher values above the sample mean in petroleum profit tax losses indicating a long- left tail in coefficient of skewness of -1.02. Asymmetry and uneven distribution in data are eliminated after differencing the series with Philip-Perron.

4.1 Unit root tests result with Philip-Perron

Stationarity statistical method are performed at levels or at first difference to observe point of integration. Table 2 is a display of Phillip-Perron non- stationarity unit root test on the data for gross domestic product and tax variables lost to taxpayers' dubious acts.

Table 2. Phillip-Perron unit root test

Variable	PP statistic		Conclusion
	Level	First difference	
GDP	-0.655086 {0.9673}	-5.232270 {0.0002}	I(1)
PPT	-3.294421 {0.0245}	-	I(0)
CIT	-5.219330 {0.0002}	-	I(0)
SDT	-3.316960 {0.0233}	-	I(0)

Note1. { } indicates p-value. note2. ()Order of integration

A table 2 observation reveals that PP has a probability greater than 0.05 for GDP (p-value 0.9673) which indicates stationarity after first difference. Hence the unit root test hypothesis is accepted for gross domestic. Thus, it is integrated at first order whereas PPT, CIT and SDT are free from presence of unit root at their natural values. Integration at order of zero means stationarity at level data.

4.1 Estimation Result of Dynamic (DOLS)

The variables from the PP statistics are integrated at levels and first differencing. Theoretical econometric requires that further analysis be conducted with autoregressive distributive lag (ARDL) suggested by Pesaran et al (2001) for a bound testing. The absence of lag in PP means that series could distribute which is backbone of Augmented Dickey Fuller (ADF). Thus, we proceed with autoregressive (AR) model which is a dynamic OLS. Being autoregressive a dynamic OLS model allows the dependent variable to depend not only on some independent variables, but also, on the previous values of itself (dependent variable) and each of the explanatory variables. The result below in table 3 is a DLOS estimate.

Table 3 Dynamic OLS statistical estimates

Variable	β coefficient	P-value	Durbin Watson	1.851099
GDP(-1)	0.861204	0.004	Adj-R ²	0.526012
PPT	-0.463165	0.0984	R ²	0.661437
CIT	0.14157	0.5943	LM	4.197223 [0.1226]
SDT	0.147347	0.4265	White test	9.332537[0.3150]
Intercept	2.003160	0.4541		

Sample (adjusted): 2011Q2 2018Q2

[] probabilities in square parenthesis

Included observations: 29 after adjustments

Table 3 shows the result of autoregressive model for the dynamic relationship between exogenously tax evasion variables with endogenous GDP. Using the result parameters re-specified as follows:

$$GDP_t = 2.003 + .861GDP_{t-1} - .463 PPT_{t-1} + .1415CIT_{t-1} + .1473 SDT_{t-1} + \varepsilon_t \quad (7)$$

All things being equal a unit increase in petroleum profit tax evasion committed in the past predicts 0.463% decline in GDP, however it does not appear to be significant. This result is quite empirically and theoretically appropriate to a priori. Company income tax non-compliance and stamp duties losses are positive and insignificant. This means a 1% increase in “tax gaps” from corporate tax and stamp duties increases economic growth by approximately 0.142% and 0.147%. This notwithstanding is contradictory to *a priori* expectation. We also observe the coefficient of autoregressive GDP (-1) (beta = 0.861204, p-value 0.004) is positively significant. This implies that future or current values of GDP can be predicted given its past values. A unit percent increase in GDP in the past quarters would lead to about 0.8612 % increase in GDP in the future.

In this study model diagnostic is presented to test goodness of fit of the model. R^2 is 0.6614. R^2 is used to test for joint changes in all the explanatory variables that can cause changes in the dependent variable. The R-squared of 0.661437 implies that changes in all the independent variables can cause and predict about 66.1% changes in GDP. The goodness of fit indicates that the model is robust in explaining variations in GDP, with the F-statistics showing that the overall regression is highly significant (F-statistics = 4.884150, p-value = 0.001887). Again, the variation between the Durbin Watson (1.851099) and R^2 (0.661437) is quite large signifying that our result is meaningful and valid. Comparatively, White test coefficient (beta = 9.332537 and p-value = 0.3150) is insignificant, hence we conclude absence of heteroskedasticity. The model is therefore good for our analyses.

Multivariate Granger Causality Analyses

Table 4 Pairwise Granger Causality and Hypotheses tests

Null hypothesis	F-statistics	p-value
CIT does not Granger Cause GDP GDP does not Granger Cause CIT	0.47687 3.77688	0.6267 0.0382
PPT does not Granger Cause GDP GDP does not Granger Cause PPT	1.28045 2.64218	0.2970 0.0927
SDT does not Granger Cause CIT CIT does not Granger Cause SDT	5.69799 0.52082	0.0098 0.6009

Table 4 is the result of a pairwise granger causality between gross domestic product and tax evasions on petroleum profit tax, stamp duties and company income. From the table we proceed to testing the hypotheses and correspondingly determine direction of causality at 5% level of significance which is compared against associated p-values of the f-statistics reported in the granger result. On the table unidirectional causality is observed between capital gain tax evasion and GDP. We therefore confirm that GDP (p-value $0.0119 < 0.9369$) evidently does granger cause corporate tax evasion. Petroleum profit tax revenue losses and GDP are neutral to each other because no causality is detected flowing from any of the variables. The hypothesis is rejected in stamp duties and corporate tax evasion. At a p-value of 0.0098 stamp duty granger causes corporate tax evasion.

Section 5. Discussions of Findings and Conclusion

Tax evasion is of topical and serious concern at the level of fiscal administration. Many studies have since been curious almost in every economy to examine theoretical domains spear-heading debates. The course for attraction stems from the fact that implementation of developmental blueprints depends on the size of internally generated revenue from taxpayers for a common reason

that self-sustaining growth and development are capital intensive projects beneficial in the long run. Previous studies have shown positive and negative effects of tax evasion on growth. This paper presents a Nigerian brand of tax collection problem in a context of dynamic model by investigating growth effects of tax evasion as previously examined in Caballé and Panadés (2000) application of model of overlapping generation. Our study objective relates with this, yet differs by looking at major individual constituent of tax structure in a dynamic model of OLS. As expected, previous findings are far from being empirically homogenous. Theory and some empirical findings suggest that tax evasion stagnates economic growth. By our evidence this traditional view is not valid in every respect. Some level of tolerance to tax corruption is beneficial in the growth process in developing countries. Likewise, each tax evasion proxy affects growth differently in mechanism and magnitude in Nigeria. Evasion exhibits two opposing effects in the findings of Attila (2011) which our findings are in agreement. By fact, under certain conditions, tax corruption can stimulate growth rate positively but it can also exert a weak negative effect via consistent depletion of fiscal revenue available for social welfare spending.

We observe this condition on the aspect of the proportion of company income tax hidden from the government or where the tax system does not go at length to have robust coverage of underground side of the economy. small scale productions which are not necessarily integrated into the conventional economy through judicious use of what appears to be “surplus” income may reinvest resources that improves on GDP. The significant and positive effect of previous GDP on future outputs confirmed the validity of endogenous growth model. Only GDP is reported to exhibit endogenous characteristics in the model among all variables we compressed into four dynamic model equations.

Petroleum profit tax negatively predicts changes in GDP, but same result is not found among stamp duties and economic growth whereby GDP grows with marginal increase in company tax frauds and losses on stamp duty. The positive sign effects between corporate tax and stamp duty under-declaration against growth may prove that by decreasing the resources available to public authorities, corruption will reduce productive public investments in such areas as road infrastructure and utilities but transfers concealed proceeds to entrepreneurs which when accumulated, the private sector’s higher investments add to economic growth as compensation for

fiscal losses, thus there is a balance. The inverse relationship between petroleum profit tax evaded is not different from the conclusion of Jit Bahadur (2018) findings in Nepal where tax evasion is argued to reduce national prosperity and individual wealth.

The Nigerian budget is almost exclusively financed from oil revenue. Government revenue losses from petroleum profit tax conforms to theoretical expectation which in practice suggests two avoidable causal implications. First illegal proceeds from underreporting of oil profits among oil firms may not be domestically beneficial to the Nigerian economy simply because, profit and capital repatriation by foreign oil corporations are usual business strategy. It is most probable that proceeds leaving the country could be divested into other profitable businesses outside the stolen source. Secondly, marginal tax rate in the petroleum industry is high in respect to operational impact and negative externalities from oil business. Although the negative effect of value evaded is not as substantial as the contribution of petroleum profit to the entire revenue in government collection, however frequent underreporting of chargeable profit by oil firms could imply that concealed resources from government reduces the amount of public services supplied by the authorities, thus leading to negative consequence for economic growth.

Considering causal effects among tax evasion variables and GDP, causality in two cases move along a unidirectional path. GDP is observed to predicts changes in value of evaded corporate tax. This could imply that rising company revenue through growing productivity may induce the tendency to dubiously accumulate more business proceeds by giving wrong information about true tax assessable profit in tax payers' record. Causality also runs from company income tax losses to stamp duty. The remaining causality relations are statistically independent in which no variable has predictive ability over each other or in reversed direction. On the basis of the findings the following policy measures are suggested.

Although the government is denied some of its tax receivables by businesses in the underground, still it might be too unfair to declare activities in the underground economy illegal, rather existence and activities in the informal economy could be tolerated by the government as it indirectly favors the economy since the end objective is sustainable growth in national output. The sum of revenue

losses by government in the hands of entrepreneurs may be ploughed back into business investments to the advantage of the economy, this is an indirect advantage for growing GDP. Secondly periodic appraisal of the tax system should be encouraged since losses on petroleum profit tax evasion is substantial and negative to economic growth. During appraisal the individual rates might be considered and amended where necessary to encourage investments in the oil sector to support the current output level.

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