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Revenue Productivity of the Tax System in Namibia: Tax Buoyancy Estimation Approach

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Abstract: Buoyancy refers to how tax revenue responds to a gross domestic product without correcting for discretionary alterations in the tax system. The paper assessed the buoyancy of Namibia's overall tax system in an attempt to measure the response of the tax system in entirety because of fluctuations in the national income and/or the deliberate act by the government to increase tax rate, reviewed tax code and tax machinery etc. The study employed the Engle-Granger approach to the error correction model to estimate the tax buoyancy for the period 2001 to 2014. The empirical findings from the study revealed that overall the Namibian tax system is income inelastic and not buoyant. This is confirmed by a low and negative value of 0.036 which is less than unit. Thus, the economy is not generating sufficient revenue both through discretionary tax measure and through the expansion in the economic activities. Therefore, the government need to introduce measures that will allow for more tax revenue collection to have a stable revenue base. This also means the government need to keep track of tax mobilization with growth in the gross domestic product as well as to ascertain taxes that are productive.

Keywords: *Government expenditure, tax buoyancy, tax revenue, income inelastic, gross domestic product*

1. Introduction

Taxation generates most income for government in Namibia with the contribution of 65% towards the total revenue (Bank of Namibia [BoN], 2015). According to this report, Namibia is experiencing persistent increase in government expenditures and a drop in government revenue. Thus, like other developing countries Namibian government is faced with challenges of mobilising enough resources to finance capital projects, poverty alleviation and to attain the targets stated by government in the national development plans. With current reduction in donor funding, the global economic crises and reduction in SACU revenue, Namibia is left with no option but to mobilise more revenue domestically in order to avail the much-needed funds for developmental projects and to address socio-economic challenges facing the country. Namibia gained independence on 21 March 1990. Prior to independence, Namibia has been using the tax system of the colonial masters of the time. Namibia's post-independence tax system operation was still under the tax system that was inherited from colonial government until amendments and changes were made some years later. Particularly, the Namibian tax system is regulated by the Income Tax Act and Value Added Tax Act 10 of 2000. Employee tax is another tax head collected by the employer from the employee and remitted to the Receiver of Revenue. These taxes are collected and enforced by the Department of Inland Revenue and Customs in the Ministry of Finance.

Namibia has a source-based tax system which implies that Namibian residents and foreign nationals are liable to pay tax on the income generated in the country. Thus tax is imposed on taxable income of individual and corporate sourced within Namibia. It is for this reason, Bonga, Dhoro-Gwaendepi and Mawire-Van Strien (2015) defined tax as a fiscal load on economic agents such as individuals or property owners to support the government. The Namibian tax structure consists of two major direct taxes: individual income tax and corporate income tax and two main indirect taxes: Value Added Tax (VAT) and Value Added Tax on Imports. In Namibia, the Ministry of Finance is mandated by the constitution to manage public finance and state revenue, to control the government assets and liabilities and overseeing financial regulations, public finances and government revenues. Thus, the Namibian government had been pursuing a number of amendments over the years with the primary objective of designing a sustainable and productive system to fund and sustain the operations of the government without resorting to deficit financing. Post-independence, the main sources of tax revenue have been a share from Southern African Customs Union (SACU), Income tax on individuals and the mining sector and general sales tax which was only operational from independence to

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2000. According to the report by the Bank of Namibia (2016), SACU revenue has been one of the major contributors to the overall tax revenue up to some few years back. However, the situation changed when global economic and financial crises took effect.

This resulted in a SACU share drop to 3 billion from 8 billion Rand. Tax from sales had been the second main contributor to total tax revenue followed by income tax in the first decade after the independence. Analysis of the medium-term expenditure framework (MTEF) or rolling budget shows that between 2011 and 2014 total revenue increased progressively from N$ 20.7 billion in 2007 to N$ 24.2 billion in 2010. This was attributed to greater revenue from SACU common revenue pool and revenue enhancing policy, driven by enhanced revenue collection and improved tax administration. Namibia has achieved a commendable tax to gross domestic product revenue collection ratio, which averages 34.3 percent in recent years, as seen against the global average of about 16.2 percent. In exclusion of SACU revenue, the national (Namibia) tax to GDP ratio stood at an average of 23.2 percent, which can be compared to the rest of the world (BoN, 2015). Namibian government debt to GDP which measures the country's ability to pay its debt has a direct effect on the cost borrowing and the bond yields. According to BoN (2016) on average government debt to GDP had been 20.88 percent between 1993 and 2015 with the ever high recorded debt to GDP of 34 percent in the last quarter of 2015. This literary means that the government had not been mobilising sufficient resources to fund the ever-increasing government expenditure. Therefore, this study examined whether or not government is generating sufficient revenue through discretionary tax measure and/or the expansion in the economic activities. This study is the first of its kind in Namibia and shed some light on the subject matter. More so, it adds on Namibia's empirical literature on this specific subject.

2. Literature Review

Economists have developed a number of theories of taxation over time to guide governments on how to harness the tax system in response to mitigate the persistence of fiscal imbalances. Singer (1968) measured or estimated tax buoyancy by estimating aggregate tax based revenue on Gross Domestic Product (GDP), which is proxy for the tax base and incorporating a dummy variable. Osoro (1993) defined tax buoyancy as the ratio of change as in growth in tax revenue to a change as in growth in the tax base. Therefore, it can be concluded that tax buoyancy measures the change in tax income (revenue) due to changes in national income without controlling for discretionary change in tax policy. Similarly, Mukarram (2001) defined buoyancy as tax revenue responsiveness to GDP without correcting for discretionary alterations in the tax system. It attempts to measure the overall response of the tax system resulting from both variations in the national income as well as discretionary act by government to raise tax rate, reviewed tax code and tax machinery etc. Tax Buoyancy = $\%\Delta T/\%\Delta GDP$. Where, ΔT is the change in tax revenue and ΔGDP, change in GDP. GDP is taken as base, although it is possible to have other bases. Several studies have used GDP as one of the determinants of tax revenue. There are numerous studies that have empirically estimated the tax buoyancy, varying from different parts of the world. Among the authors who conducted empirical work on the subject matter are as presented below. Wanjiku (1993) examined the productivity of revenue's implications of the tax system and that of individual taxes in Kenya over the period from 1972/73 to 1990/90. A proportional adjustment method (PAM) and a double log regression function were employed to estimate tax buoyancy and tax elasticity.

The results showed an inelastic tax system with respect to income with a value of 0.67064. The performance of the income taxes was not statistically significant, though showed a slight improvement with an elasticity of 1.07130. Similarly, in Ghana, Kusi (1998) also employed a proportional adjustment method on data covering the period 1983 to 1993. In addition, the study also utilised a constant rate structure to estimate the tax buoyancy and tax elasticity. This was to assess how productive the overall tax system is as well as that of the individual tax heads. The results from this study revealed that post-reform buoyancy of (1.29) and elasticity (1.22) was much larger than the pre-reform period of (0.72) and (0.71) buoyancy and elasticity respectively. The study revealed a major impact on both. Particularly, the study attributed low buoyancy and elasticity during the pre-reform period to smuggling, unrecorded trade, tax evasion and laxity in tax collection. Another study on the same subject but in a different continent by Mukarram (2001) examined the elasticity and buoyancy in Pakistan, specifically for the major taxes covering the period 1981-2001. Using the chain indexing technique, the results reveal that the tax estimates were higher for direct taxes, followed by those of

sales taxes. The results further indicated that customs and excise duties are rigid as a result of tax elasticity which was low. The study concluded that higher buoyancy estimates in comparison with coefficient estimates of elasticity for all the taxes confirm that growth in revenue was achieved due better tax rates and widened tax base as an alternative to automatic growth. On the same country, Bilquees (2004) applied a divisia index approach examined the elasticity and buoyancy of the tax system in Pakistan over the period 1974/5 to 2003/4.

The results from this study indicated that elasticity coefficient of the tax revenue both with respect to total GDP and non-agricultural GDP is less than a unit. The buoyancy estimates suggested that tax restructuring was less impactful in realising revenue growth in Pakistan. In the Southern African region, Bolthole and Aglobenebo (2006) conducted a study on Botswana to estimate both tax elasticity and tax buoyancy. In employing the vector error correction model (VECM), the results revealed that the tax system was income inelastic but buoyant. Tax buoyancy results were also found by the results of a study by Timsina (2007) in Nepal. In particular, the results of the study showed that the tax system in Nepal was less responsive (inelastic). However, the buoyancy coefficient was more than unitary, suggesting that most revenue collections emanates from discretionary policy in the tax policy and not form self-adjusting. Tegegn (2008) assessed the tax revenue productivity in Ethiopia for the period 1961 to 2005. Using a dummy variable technique approach, the results showed that tax revenue tends to be inelastic with respect to change in the tax base. Using a similar approach, Twerefou, Fumey, Assibey and Asmah (2010) conducted the same study in Ghana. Particularly, the authors used the historical time series data for the period 1970 – 2007. In employing the residual approach to cointegration for long-run analysis, the results revealed that the overall tax system was buoyant and responsive, though the opposing results were evident in the short-run.

Gituku (2011) employed the proportional adjustment method (PAM) which was also used by Samwel and Isaacs (2012) to estimate elasticity and buoyancy of the various tax components employing this method on Kenyan data for the period of 24 years. The findings of this study revealed an inelastic tax with respect to income. In Zimbabwe, Ndedzu, Macheka, Ithiel and Zivengwa (2013) evaluated Zimbabwe's revenue productivity of overall tax system covering 1975 to 2008. They employed a dummy variable technique to compute buoyancy. Their results were not buoyant with the overall tax systems except customs duty. The study concluded that buoyant and elastic tax structure is the most appropriate in a developing country. This means an automatic adjustment of tax collection in tandem with growth in national income, hence less discretionary changes. In Kenya, Mawia and Nzomoi (2013) examined tax buoyancy using quarterly data for the period 1999/2000 - 2010/2011. The findings revealed an overall buoyant tax system with a value of 2.58, while their individual tax heads were not buoyant with the exception of excise duties which was found buoyant with respect to the base. The study noted that the responses of tax bases to changes in economic activities showed high buoyant values greater than unit. Similarly, Meshak (2014) evaluated the Nigerian's tax productivity. The data used was that of GDP and aggregate tax revenue covering 1993 to 2012. The study adopted tax buoyancy as against elasticity in the decomposition process of tax-to-base and base-to-income. The results showed that two out of four tax bases has a buoyancy above a unit with VAT as the most buoyant of all with the coefficient of 1.82, while the total tax revenue has the buoyancy of 0.95.

Mandela and Olukuru (2015) assessed the extent of tax buoyancy in Kenya between the year 1980 to 2014 and also of South Africa between the years 1972 to 2014. The study adopted the error correction modelling approach for this purpose. The results revealed that tax system for both countries is buoyant, both in the short run and long run. Particularly, the study found a statistical significant buoyancy coefficient of 1.77 for South Africa and 1.18 for Kenya in the long run respectively. Results ofshort-run buoyancy coefficients showed a significant 1.82 and 2.69 for South Africa and Kenya respectively. Edeme, Nkalu, Azu and Nwachucku (2016) examined the relationship between tax revenue and Gross Domestic Product in Nigeria for the period 1970 to 2013. The study employed an ordinary least squares in the form of log-linear to compute the buoyancy estimates. The findings of the study indicated that tax revenue is highly buoyancy with respect to national income. The study also found a very low buoyant coefficient in response to revenue from the social sector. The theoretical and empirical literature showed numerous methods used to analyse the productivity of the tax system in different countries. This includes among others Dummy Variable Approach, Divisia Index method, Constant Rate Structure, Proportional Adjustment Method, Ordinary Least Squares, Error Correction Models and Vector Error Correction Models. In terms of findings, there seem to be mixed

findings from positive to negative effect, elastic buoyancy to inelastic buoyancy. In the absence of an empirical study of this nature in Namibia, this study intends to be the first of its kind to shed some light and fill this gap.

3. Methodology

The section constitutes three sub-sections. Section one presents the analytical framework. The second sub-section discusses the model construction and specification. Lastly, sub-section three discusses data issues and the measurement of variables.

Analytical Framework: It is well known that as time changes government undertakes changes in the form of change in tax rates, tax reforms and budget rationalization programmes. These changes are aimed at enhancing and harnessing revenue productivity of the tax system in response to the dynamics of the economy. Therefore, studying the productivity of the tax system is essential especially, particularly this study utilised the approach of Singer (1968) to analyse tax buoyancy.

Tax Buoyancy: Tax Buoyancy is a measure of percentage change in tax revenue, including discretionary tax changes due to a percentage change in GDP which is the base (Bonga et al., 2015). Tax buoyancy outlines the connection between the change in state's tax revenue growth and the change in national income. Tax buoyancy can be evaluated by regressing tax revenue over the tax base which is real GDP in this case once applying the natural logarithm for each of them. This assesses the link between the proportional changes in revenue and those in GDP. To measure the overall buoyancy of the tax system, the relative change in total revenue from tax with respect to the relative change in national income. This is stated as:

$$B_{TY} = \frac{\Delta T}{\Delta Y} \times \frac{Y}{T} \quad (1)$$

From the above expression T is total tax revenue, Y represents GDP. The buoyancy of the tax system can be decomposed into buoyancy of individual taxes;

$$B_{TY} = \frac{T_1}{T_t} B_{T_1 Y} + \frac{T_2}{T_t} B_{T_2 Y} + \ldots + = \frac{T_n}{T_t} B_{T_n Y} \quad (2)$$

$T_t = T_1 + T_2 + \ldots + T_n$ and n is the number of tax heads. Buoyancy of the tax system according to Bonga et al. (2015) it is the weighted sum of individual tax head buoyancy and this is utilised to acquire elasticity of tax with respect to tax-to-base and base-to-income stated as:

$$Tax\text{ - }to - base - elasticity = \frac{\Delta T}{\Delta B} \times \frac{B}{T} \quad (3)$$

And

$$Base - to - income - elasticity = \frac{\Delta B}{\Delta B} \times \frac{Y}{B} \quad (4)$$

Buoyancy of the tax system than becomes;

$$B_{TY} = \frac{\Delta T}{\Delta Y} \times \frac{Y}{T} = \left(\frac{\Delta T}{\Delta B} \times \frac{B}{T}\right) \times \left(\frac{\Delta B}{\Delta Y} \times \frac{Y}{B}\right) \quad (5)$$

Tax buoyancy is measured in the way with tax elasticity. According to Appiah (2013) the only difference is when discretionary measures are not controlled which change the tax rate and/or base, then the sensitivity of tax revenue to changes in national income is the buoyancy. This means that a tax is buoyant when the value is greater than unit/one. In cases where the elasticity of main revenue bases are low irrespective of the amendments and incentives that the state undertakes due to factors such as evasion, the state resort to raising additional resources through discretionary measures. Tax revenue increases when the buoyancy is high compared to elasticity.

Model Specification and Data Analysis: This study will follow the unadjusted historical time series tax data with the dummy variables integrated as proxies for discretionary tax measures as developed by Singer (1968) to measure buoyancy and elasticity of the tax system, because of non-intensive data required and for the fact that it does not require disaggregated data.

By specifying Singer's (1968) multiplicative form of a tax revenue model stated as:

$$TTR = e^{\propto} Y^{\beta} e^{z}$$

$$lnTTR = \alpha + \beta lnGDP + z \quad (6)$$

Ordinary Least Square (OLS) is applied to equation (6) to estimate the parameters α and β, the coefficient β represent the tax buoyancy estimates and z it the stochastic term. Y in the Singer's equation represents GDP. Using equation (6) above tax buoyancy is decomposed in two components:

Tax-to-Base component: $\ln TTR_k = \alpha_o + \alpha_k \ln B_k + v$ (7)
Base-to-income Component: $\ln B_k = \delta_o + \delta_k \ln Y + \mu$ (8)
From the above equations TTR_k is the unadjusted historical time series tax data of the k^{th}tax, $B_k$is tax base for the k^{th} tax, GDP/Y is the nominal Gross Domestic Product which is also the entire base,α_k is the elasticity of the k^{th}tax to its base, δ_k is the elasticity of the k^{th} tax base to income, a_o, δ_o are constants while v and μ are stochastic error terms.
Dummy variable D is introduced in the two equation above to capture the effects of tax reforms in the short run. The Dummy Variable Approach utilizes unadjusted HTSD with dummy variables integrated as proxies for discretionary tax measures to capture elasticity. The empirical model from equation (6) is then expressed as follow:
$\text{Ln } TTR_t^k \alpha + \beta_1 \ln Y_t + \beta_2 \ln Y_{t-1} + \sum_{i=1}^{k} \beta_{\beta i} D_i + \varepsilon_t$ (9)
From the above equation TTR_t^k represent tax revenue for the k^{th}tax, β denote the elasticity and D for dummy variables, dummy variables takes values one for discretionary tax measures and zero for otherwise. Summation sign will take into account of the discretionary tax changes over the period understudy. This study consider two dummies, D_{2011} which reflect fiscal reforms undertaken in 2011 and D_{slope} which is an interactive term/ slope of the tax revenue function as a result of a reform. Slope (D_{slope}) in this study is defined as a product of total revenue and D_{2011}, is done to warrant the linearity in the model. In this model the lagged base are incorporated to cater for the efficiency in administration or otherwise in the collection of tax. This study employed the Engle-Granger two steps co-integration approach in determining the long-run relationship among the variables involved. In that regard, the following procedures were followed, the unit root test, co-integration test and error correction model as discussed below. The unit root test is necessary to determine the statistical properties of the variables in order to avoid nonsensical regression results. This is because spurious results are possible with non-stationary variables. Non-stationary variables can be transformed to become stationary by differencing them until they become stationary (Gurajati, 1995). However, the presence of unit root (non-stationary) does not automatically translate into the absence of cointegration.

Variables can be integrated of different orders and still have co-integration or they can be integrated of order other than zero (in levels) and still be co-integrated. In this study, the Engle-Granger approach to co-integration was used and it requires one to estimate a long-run model with all the variables that are not integrated of order zero. Thereafter, a residual is derived from the long-run model estimated and testing it for unit root in levels only. Thus, the stationarity of the residual in levels implies cointegration whereas the non-stationarity of the residuals, in levels implies no co-integration (Asterious and Hall, 2009). Finally, when cointegration is established, the error correction model (ECM) is estimated. Hence, the ECM is estimated to correct for short term disequilibrium while taking into account the long-run relationship. This stem from the fact that most economic shocks are mostly experienced and observed in the short-run (Asterious and Hall, 2009). In this regard, the condition is that the coefficient of the error correction term (ECT) must be negative and statistically significant. Furthermore, the coefficient should be within a range of 0 to -1. However, there is emerging literature where it is argued that the error correction term with a limit of 0 to -2 also make sense depending on the shock absorption (adjustment) and flexibility of the economy. This is because of negative means oscillating convergence.

Data Sources, Definition and Measurement of Variables: The study used quarterly time series data for the period 2001 to 2014 financial years. The reasons for choosing this period are as follow. Firstly, the Value-added tax (VAT) was introduced in 2000; this replaced the general sales tax which was inherited from the colonial era; hence data on general sales tax is not available. Thus, this study makes use of the data over the period 2001/2 to 2014/5 which is obtained with the written approval from the permanent secretary in the Ministry of Finance. The data was obtained from Ministry of Finance, Inland Revenue Department and Bank of Namibia. The data collected are for the variables gross domestic product (GDP), total tax revenues and various relevant tax heads (Income tax, VAT, PAYE and Import duty). Specifically, the variables of the model are real GDP, total tax revenue (TTR) and Dummy variable (D) this is referred to as tax reform or change in tax policy variables. Table 1 below shows the variables used in the model how they are measured.

Table 1: Definition and Measurement of Variables

Variable	Definition and Measurement
Total tax revenue (TTR)	This is the total revenue of all individual tax heads and its measured in Namibian dollars
Gross Domestic Product (GDP)	This is the value of goods and services produced in a country over the period of one year irrespective of whether they were produced by foreigners or domestic residents. This is measured in Namibian dollar as well.
Dummy variable (D1)	This is a slope dummy variable representing changes undertaken in 2011 and this takes 1 for the change and zero for otherwise.

4. Analysis and Discussion of Empirical Results

This section presents the empirical findings and discussion. Firstly, the discussion is on the findings on the unit root test results. Secondly, the results for the cointegration test. Thirdly, the error correction model is also presented and discussed.

The Unit Root Test: It is generally accepted that the first step to time series modelling should be testing the statistical properties of the data well known as the unit root test. In this study, the Augmented Dickey-Fuller test for unit root was used.

Table 2: Unit Root Test: ADF in levels and First Difference

Variable	Model specification	Levels	First Difference	Order of integration
LNTTR	Intercept	-1.735	-8.148**	I(1)
	Trend and intercept	-3.276	-8.255**	I(1)
LNGDP	Intercept	-0.384	-2.937**	I(1)
	Trend and Intercept	-2.897	-2.925**	I(1)
LNETX	Intercept	-1.232	-8.401**	I(1)
	Trend and Intercept	-2.315	-8.493**	I(1)
LNITX	Intercept	-1.132	-7.573**	I(1)
	Trend and Intercept	-2.611	-7.502**	I(1)

Note: ** means the rejection of the null hypothesis at 5%

Table 2 presents the results of the unit root test in levels as well as in first difference. The result shows that all the variables are nonstationary in levels. This suggests that the null hypothesis of non-stationarity of the variables could not be rejected in levels. Therefore, the variables were differenced once and eventually became stationary. Thus, all the variables are integrated of order one I(1). It follows that the basic ordinary least square cannot be directly applied to these variables due to the non-stationarity nature. Hence, the suitable modelling strategy to use was the Engle-Granger two-step procedures to estimate the regression model.

Cointegration Test: The cointegration analysis was done by estimating Engle-Granger co-integration relationships better known as the residual based approach. The first step required an estimation of a long-run model from which the residual was derived.

Table 3: Unit Root Test for the Residuals

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-3.517033	0.0111
Test critical values:	1% level	-3.555023	
	5% level	-2.915522	
	10% level	-2.595565	

Table 3 presents the results of the unit root test of the residual derived from the long-run equation. The results revealed that the residual is stationary in levels at 5% and 10% level of significance. This implies that the null hypothesis of no cointegration among the variables was rejected. Thus, there is evidence of the existence of cointegration. This suggests that an error correction model can be estimated.

The Error Correction Model – Estimation for Buoyancy: Table 4 below presents the results of the error correction model for buoyancy estimates. The table shows that the buoyancy of the Namibian overall tax system is low with a negative of 0.036 the fact that the value is less than one confirming the non-buoyancy in response to changes in national income. This shows that Namibia is not generating sufficient revenue both through discretionary tax measure and through the expansion in the economic activities. These results conform to studies done in other developing countries such as a study by Ndedzu et al. (2013). The negative/ low buoyancy is attributed to negligence in administration of taxes. Another possible cause of poor revenue is the existence of large number of informal sector which is outside the tax system.

Table 4: Error Correction Model

Dependent Variable: D(LNTTR)				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
C	0.006441	0.018363	0.350739	0.7273
D(LNGDP)	-0.036138	1.324278	-0.027289	0.9783
D(LNETX)	0.680178	0.113520	5.991723	0.0000
D(LNITX)	0.458055	0.064914	7.056311	0.0000
ECT(-1)	-0.269312	0.086688	-3.106675	0.0031
R-squared	0.762004	Mean dependent var		0.040267
Adjusted R-squared	0.742964	S.D. dependent var		0.117740
S.E. of regression	0.059693	Akaike info criterion		-2.712708
Sum squared resid	0.178160	Schwarz criterion		-2.530224
Log-likelihood	79.59948	Hannan-Quinn criteria.		-2.642140
F-statistic	40.02183	Durbin-Watson stat		1.911452
Prob(F-statistic)	0.000000			

Source: Authors compilation using Eviews

The coefficient of the error correction model is negative and statistically significant. It takes about 27% for the variables to converge to a long-run equilibrium where disequilibrium is corrected. The adjusted R^2 for the model adopted in this study is 0.74, meaning that about 74% of the variation in tax revenue is explained by the model. The F statistics which test the overall significant of the model strongly rejects the null hypothesis that the regression coefficients jointly equal to zero. This implies that all the explanatory variables in the model are an important determinant of tax revenue productivity in Namibia. The Durbin-Watson (DW) statistic of 1.91 indicates that the regression model does not suffer from the problem of auto correlation.

5. Conclusion

This paper assessed the buoyancy of Namibia's overall tax system. Buoyancy is referred to as the responsiveness of tax revenue to GDP without correcting for discretionary changes in the tax system. In other words, it attempts to measure the total response of the tax system due to both changes in the national income and the deliberate decision of the government to raise tax rate, reviewed tax code and tax machinery etc. The study employed the Engle-Granger approach to the error correction model to estimate the tax buoyancy for the period 2001 to 2014. The empirical findings from the study revealed that the buoyancy of the Namibian overall tax system is low with a negative value of 0.036. This is to say, the fact that the value is less than 1; it implies that the total tax system is not buoyant with respect to national income. Thus, the economy is not generating sufficient revenue both through discretionary tax measure and through the expansion in the economic activities. These results conform to studies done in other developing countries such as a study by Ndedzu et al. (2013).

Due to the low tax productivity of the Namibian system, the study recommends a greater need to broaden the tax base by registering the informal businesses and increase tax revenue from the informal sector. This will broaden the tax base and increase tax revenue from the informal sector. Moreover, the tax authority needs to upgrade from the current manual ways of submitting returns by investing in technology as it will be more convenient for taxpayers to file and do inquiries online. There is a need to speed up developing of the new Integrated Tax Administration System (ITAS), as this will improve tax payer's service and operational tax administration efficiency. Lastly, the importance of research in the area of tax efficiency should be emphasised, as there are dearth studies with respect to Namibia on productivity of the tax system.

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