TAX AND ECONOMIC GROWTH IN NAMIBIA

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ABSTRACT

This study empirically examined the relationship between taxation and economic growth in Namibia. Time series techniques such as unit root, cointegration, impulse response functions and variance decomposition were used within the vector autogression framework. The study utilized quarterly data for the period 2001 to 2015. The results of the unit root test revealed a combination of order of integration. The cointegration test showed no existence of long-run relationship among the variables. Therefore, the long-run analysis could not be conducted, but only the short-run analysis. The results of the impulse response functions revealed an immediate negative effect on economic growth resulting from shocks in tax. Moreover, the forecast error variance decomposition revealed that tax is responsible for moderate fluctuation in economic growth in Namibia.

Keywords: Vector autoregression, taxation, economic growth, Namibia.

INTRODUCTION

Since 1995 Namibian economic policy has been conducted in terms of medium-term framework derived from the first National Development Plan (NP1) covering the period of 1995 to 2000. The main national development goals included a 5 percent average annual real development (growth) target, the creation of employment, and the decline of inequalities income distribution (that resulted from a history of apartheid) and the tackling of poverty. High taxation in the nation may also have been a contributor to these large disparities, as this study investigated. The achievements to develop the nation so far have not been very pleasing as economic growth has consistently been below target.

Namibia has been part of the Common Monetary Area (CMA) since 1986 (Thompson, 1992). In this arrangement, the Namibia Dollar (NAD) is pegged one-to-one with the South African Rand (ZAR), since the introduction of the Namibia Dollar in 1993. The other members are South Africa, Swaziland and Lesotho. Since joining the CMA the states using the ZAR have given up the independence of their monetary policy.

The Namibian economy has sustained Gross Domestic Product (GDP) growth since the global economic crisis in 2009. Fiscal policy has been a key countercyclical tool in sustaining economic growth in the aftermath of the crisis because of the lack of an independent monetary policy. The real GDP remained stout at 5 percent in 2012 despite the global turbulence and was estimated to have slowed down by 0.8 percent in 2013 and picked up slightly to 4.3 percent in 2014 (Honde and Odhiambo, 2014).

Rena and Kefela (2011) define fiscal policy as the means through which government adjusts levels of spending simultaneously with tax to control the nation's economy, whereas,

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monetary policy is the sister strategy used by the Central Bank to influence money supply. Fiscal sustainability depends on current levels of both domestic and foreign debt and government's willingness to tax and impose aggressive measures. Rena (2011) goes on to state that taxation is the only means of rationally raising revenue to government spending on goods and services. However, there are many other ways for government to raise revenue such as borrowing, falling back on their international reserves/revenue earned through exports, and in some extreme cases, printing more money, but tax collection is the most common one.

Investment and tax reforms are put down as the foundations for a stronger and more productive economy (Shome, 2004). A strengthened outline for sound fiscal policy together with a monetary policy outline provide this platform of stability for achieving governments' goal to be economically productive and having sustainable levels of employment (Rena and Kefela, 2011).

The effects of taxation on economic growth are a subject of much debate. Almost invariably, it is maintained that increasing taxation has a negative effect on the economy. It is said that demand side economics is the real foundation for an expanding economy (Freeman, 2006). However, the following of this theory has not been the case for Namibia, rather the policy follows the supply side economic theory and consequently, 51% of Namibian state revenue is accrued from regressive indirect taxes like the Value Added Taxes (VAT) and import taxes (Rademacher and Stiftung, 2011).

In the United Nation's Development Program's (UNDP) 2009 report shows that Namibia is one the countries with the highest recorded levels of inequality and poverty (Jauch, Edwards and Cupido, 2009). Subsequent use of a regressive tax reform under supply side economics will take away from the poor and lower earners, that 'extra dollar' that only the wealthy can afford to invest. This only widens the gap of inequality and does not help in remedying the disparity problem in the country. The presence of high levels of inequality makes a tax regime and form of taxation unfavourable. This study examines how the alternatively used supply side orientation in Namibia has affected growth; through the analysis of the relationship between taxation and economic growth.

The paper is organized as follows: the next section presents a literature review. Section 3 discusses the methodology. The empirical analysis and results are presented in section 4. Section 5 concludes the study.

LITERATURE REVIEW

There are two main theories developed in macroeconomics regarding impacts of taxation and government spending on economic growth. These are supply side economics and demand side economics originating from the neoclassical and Keynesian's theories, respectively.

Supply side fiscal policies (developed by the neoclassical) emphasise increase in aggregate supply in order to achieve long term growth in real output, full employment and reduced levels of inflation. They also use regressive tax. A regressive tax is a tax that takes a larger percentage from low-income people than from high-income people. A regressive tax is generally a tax that is applied uniformly. This means that it hits lower-income individuals harder. These policies are based on the notion that the market is self-regulating. State intervention should only be adopted when the market has negative externalities such as

environmental damage (Tucker, 2010; Rademacher and Stiftung, 2011). An example of the use of this theory would be in the case of budget deficit consolidation especially where inflation of the monetary policy is not an option; taxes would be expected to increase in future. Nonetheless, the neoclassical theory would suggest achieving a balanced budget by lower government expenditure only, since high tax inhibits investment. The tax policy itself should be incremental and not intervene in the distribution of income. In addition, low corporate taxation leads to increased investment flow which in turn leads to growth in the economy.

On the negative side, the supply side theory benefits the suppliers, with the rich getting richer, and the poor getting poorer. This is because tax cuts go to the wealthy, for they only can afford to use the extra income to invest in the economy. That is however not the case for the demand side theory, which suggests that the tax cuts are to go to those that earn the least in the economy. This theory, if and when employed, would then remedy or even in the least, reduce the case of disparity in a nation. The reason is that low income workers use virtually all their income and the money goes back into circulation. This enhances consumer spending (Freeman, 2006).

As explained above, Keynesian's demand side theory advises economic policy to support consumption and should be based on direct taxes. Direct taxes are progressive and the proportion of tax payment increases with income. It also opposes neoclassical theory and tries to prove the market isn't always at equilibrium and the need for government intervention in order to encourage growth and employment.

The other principles to guide justice and equity of taxation are the Benefit Principle, Ability-to-Pay Principle, Cost of Service Theory, and Principle of Proportionate in Taxation. The Benefit Principle dictates that a taxpayer should only have tax apportioned to them according to the benefit derived from government activities or spending. However, there many limitations and criticisms of this theory. It takes too narrow a view of the services that government provides. Similarly, most of government's expenditure is for the general benefit of citizens. It is unrealistic to calculate the individual benefit of every citizen annually. In addition, if this theory was to be implemented, the poor would pay the heaviest taxes because they are the ones that benefit more from public services (Young, 1995).

The Ability-to-Pay Principle is concerned with the redistribution of income. It states the magnitude of a person's sacrifice depends not only on their tax payment but also their income and other circumstances, meaning higher income earners sacrifice more so there is equitable redistribution of income (Mankiw, 2008). Another theory is that of the Cost of Service Principle. The theory stipulates that everyone should contribute in taxes, the actual cost in which he is a beneficiary (Kennedy, 2012). However, this theory faces similar limitations and criticisms as the aforementioned Benefit Principle.

The Principle of Proportionate in Taxation was suggested by J.S Mill and other classical economists. They were of the opinion that individuals should be taxed according to their incomes in order to extract equal sacrifice. To implement this principle, the government would need to employ progressive taxation.

There is plenty of empirical literature on the relationship between tax and economic growth. Engen and Skinner (1996) re-examined the relationship between economic growth and taxation, in light of the accumulated evidence both in USA and other countries from the

period of 1970 to 1985. Using cross sectional data they found that high taxes are not good for economic growth, either in data or in theory. The evidence is consistent with lower taxes having modest positive effects on economic growth.

Poulson and Kaplan (2008) explore the impact of tax policy on economic growth in the United States within the framework of an endogenous growth model. Regression analysis was used to estimate the impact of taxes on economic growth in the states for the period 1964 to 2004. The results revealed a significant negative impact of higher marginal tax rates on economic growth.

Forbin (2011) examined the empirical effect of corporate income tax on GDP growth rate using historical data from 1951 to 2010 for Sweden. The findings are that corporate income tax rates have no significant effect on Swedish economic growth.

Mutascu and Danuletiu (2011) analysed the relationship between taxes and economic growth in the case of Romania for the period January 1999 to March 2010, using an unrestricted Vector Auto-regression Model (VAR) based on the rate of dynamic taxation's level and the rate of dynamic economic growth. The results show that the tax policy in Romania cannot be taken to extremes, and should be very carefully implemented because a large amount of factors can influence the results.

Acosta-Ormaechea and Yoo (2012) investigated the relation between changes in tax composition and long-run economic growth using a new dataset covering a broad cross-section of countries with different income level. They considered 69 countries with at least 20 years of observations on total tax revenue during the period of 1970 to 2009—21 high-income, 23 middle-income and 25 low-income countries. They found that increasing income taxes while reducing consumption and property taxes is associated with slower growth in the long run. Similarly, they found that, firstly, among income taxes, social security contributions and personal income taxes have a stronger negative association with growth than corporate income taxes; secondly, a shift from income taxes to property taxes has a strong positive association with growth; and lastly, a reduction in income taxes while increasing value added and sales taxes are also associated with faster growth.

A study by Worlu and Emeka (2012) examined the impact of tax revenue on the economic growth of Nigeria, judging from its impact on infrastructural development from 1980 to 2007. The data collected was analysed using the three stage least square estimation technique. The results showed that tax revenue stimulates economic growth through infrastructural development. The study also revealed that tax revenue has no independent effect on growth through infrastructural development and foreign direct investment, but just allowing the infrastructural development and foreign direct investment to positively respond to increase in output.

Yi and Sunyono (2014) analysed the relationship between tax revenue and economic growth in china in the period of 1978 to 2011 in the Hebei province, China. They found that generally, maximisation of tax revenue is incompatible with the maximisation of GDP. They used the tax multiplier to analyse the negative correlation between tax and economic growth and the polynomial distributed lag (PDL) model. The result showed there is a negative impact of tax revenue on growth which may not be as economically significant as one would think, and that tax cuts in their Hebei Province in China would create more positive effects.

Macek (2014) study aimed to evaluate the impact of individual types of taxes on the economic growth by utilizing regression analysis on the OECD countries for the period of 2000 to 2011. It was evident from the results of both analyses that corporate taxation followed by personal income taxes and social security contribution are the most harmful for economic growth. Simultaneously, in case of the value added tax approximated by tax quota, the negative impact on economic growth was not confirmed, from which it can be concluded that tax quota, in this case as the indicator of taxation, fails. When utilizing the World Tax Index, a negative relation between taxes and economic growth was confirmed, however, it was the least quantifiable and the impact of property taxes was statistically insignificant.

From the literature review above the lesson is that, although many factors influence economic growth, taxation and tax policy should be implemented with caution. Firstly, increase of taxes has a negative impact on or slows economic growth. Secondly, the opposite is true for the reduction of taxes. Reduction in taxation for corporations encourages investment, which then ultimately results in economic growth. However, significance of the negative correlation between taxes and economic growth varies between countries. This is seen in the case of Sweden as analysed by Forbin (2011), where corporate income tax had no significant effect on the nation's economic growth. Therefore, in the absence of the study of this nature in Namibia, this study becomes first of its kind to shed light on the subject matter and fill the gap.

METHODOLOGY

Empirical Framework and Model Specification

This study adapted the model specification used by Mutascu and Danuletiu (2011) using the unrestricted Vector Auto-regression (VAR) to investigate the relationship between dynamic taxes (DT) and dynamic growth (DG), and analysed the existence of a relationship between tax and economic growth. The model is also commonly used for forecasting systems of interrelated time series, and for analysing the dynamic impact of random disturbances on the system of variables. In VAR models some variables are treated as endogenous and some as exogenous or predetermined (exogenous plus lagged endogenous). This study makes use of a bivariate VAR model with two variables - DT and DG. Considering that each of the VAR equations contained *k* lag values, for the *t* period, the model is expressed as:

$$DT_t = \alpha_1 + \sum_{j=1}^{k} \beta_J \, DG_{t-j} + \sum_{j=1}^{k} \gamma_j \, DT_{t-j} + u_{1t} \quad \ldots 1$$

$$DT_t = \alpha_2 + \sum_{j=1}^{k} \varepsilon_J \, DG_{t-j} + \sum_{j=1}^{k} \varphi_j \, DT_{t-j} + u_{2t} \quad \ldots 2$$

Where α_1, α_2 are the intercept terms; $\beta_j, \gamma_j, \varepsilon_j, \varphi_j$ are the coefficients of the endogenous variables, and *u* are the stochastic error terms.

The main uses of the VAR model are the impulse response analysis and forecast error variance decomposition. The analysis was carried out in the following order. Before VAR estimation, unit root was employed using the Augmented Dickey-Fuller (ADF) test which will be supported by the Phillips and Peron (PP) test; variables would have be confirmed stable before being run. The cointegration test tested for long run relationship among the variables. This was established by applying the Johansen test. The existence of cointegrating equation(s) or not determined whether the restricted or unrestricted VAR, respectively was used.

Unit Root Test

The Augmented Dickey-Fuller (ADF) test and Phillip-Perron (PP) test are the unit roots tests were used to check for stationarity. Stationarity in this case was a concern because of the use of time series data. These approaches present a modified version of the simple Dickey-Fuller

test that would have otherwise been carried out, which has a wide class of errors, allows for some heterogeneity and serial correlation errors (Manddala & Kim, 1998). The PP test was used as an advancement of the ADF test. It makes the non-parametric correction to the t-test static; whilst the ADF test is for parametric corrections.

Cointegration Test

Cointegration simply implies the presence of long-run relationship among the variables. If there are two non-stationary time series variables differenced of order one I(1), can have linear combinations with I(0) of two of the same variables that are stationary. If so, then the variables are said to be cointegrated and this is an important property (Manddala & Kim, 1998). This cointegration describes the long run relationship between the variables using the residuals of the unit root test, that it must be stationary to signify cointegration existence. In this regard, the Johansen test for cointegration was used.

Impulse Response Functions

This is a reaction of a dynamic system in response to external change. The impulse response is the reaction of the system as a function of time and another independent variable.

Forecast Error Variance Decomposition

This application was used to help in the interpretation of the VAR model once it was fitted. It specifies how much each variable contributes to the other variables in autoregression, determining how much of the forecast error variance of each variable is explained by exogenous shocks to the other variable.

Data Sources

The data used secondary data, quarterly data to be specific, for the period 2001 to 2015. The tax data was sourced from the Ministry of Finance and the GDP data from Namibian Statistical Agency and Bank of Namibia publications.

RESULTS

Unit Root test

Table 1: Unit root test in levels, first and second difference.

Variable	Model Specification	ADF Level	PP Level	ADF First Difference	ADF Second Difference	PP First Difference	Order of Integration
DT	Intercept	-0.127	-0.934	-1.958	-7.363**	-7.632**	2
	Intercept and Trend	-1.958	-1.993	-7.563**	-7.292**	-7.564**	1
DG	Intercept	-0.940	-0.376	-11.847**	-6.489**	-25.802**	1
	Intercept and Trend	-7.419**	-7.426**	-11.726**	-6.426**	-25.694**	0

Source: Authors compliance and values from Eviews
*Note: ** means the rejection of the null hypothesis at 5%.*

In this study, the Augmented Dickey-Fuller and Phillips-Perron tests were applied. The results of the of the unit root are presented in table 1. The result reveals that the variable DT became stationary in second difference when considering intercept, while stationary in first difference when considering intercept and trend. The variable DG was found stationary in

first difference when considering intercept, while stationary when considering intercept and trend.

Cointegration

Table 2: Cointegration. Johansen Test Based on Trace and Maximum Eigen Values of the Stochastic Matrix

	Eigen value	Trace statistic	5% critical level	Prob**	Max. eigen statistic	5% critical value	Prob**
None	0.075775	4.674482	15.49471	0.8424	4.412760	14.26460	0.8134
At most 1	0.004663	0.261772	3.841466	0.6089	3.841466	3.841466	0.6089

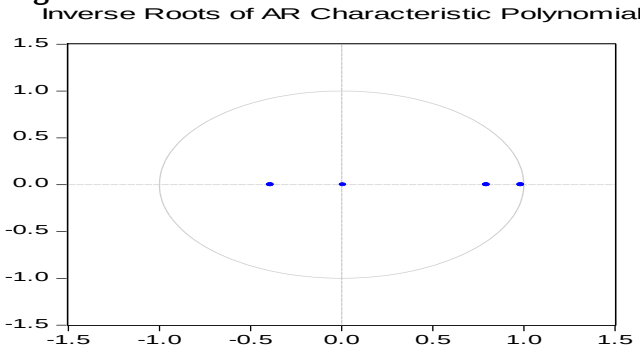
Source: Authors compliance and values from Eviews
*Note: Trace test indicates no cointegrating at the 0.05 level and ** represent the p-values*

Table 2 shows the results of the Johansen cointegration based on the trace and maximum eigen value statistic test. The results show that the trace statistic values are smaller than the critical values, thus the null hypothesis of no cointegration could not be rejected. Similarly, the maximum eigen values are also smaller than the critical values and thus, the null hypothesis of no cointegration could not be rejected. On the basis of the above, the overall conclusion is that there is no cointegration among the variables. This is to say, the variables do not converge to some long-run equilibrium value.

VAR Stability Condition

It is important to determine whether VAR satisfy the stability condition based on the roots of the characteristic polynomial. If the VAR is unstable, the results of impulse response function and variance decomposition will be invalid. In this study VAR satisfies the stability condition as the value of its AR roots is less than one and there is no root that lies outside the unit circle. Moreover, the maximum lag length on the VAR stability that is based on the roots of the characteristic polynomial was found to be 4 as suggested by the majority of the criterion. The results are shown in Figure 1 and Table 3 respectively.

Figure 1: Inverse Roots of AR Characteristics Polynomial



No root lies outside the unit circle.
VAR satisfies the stability condition

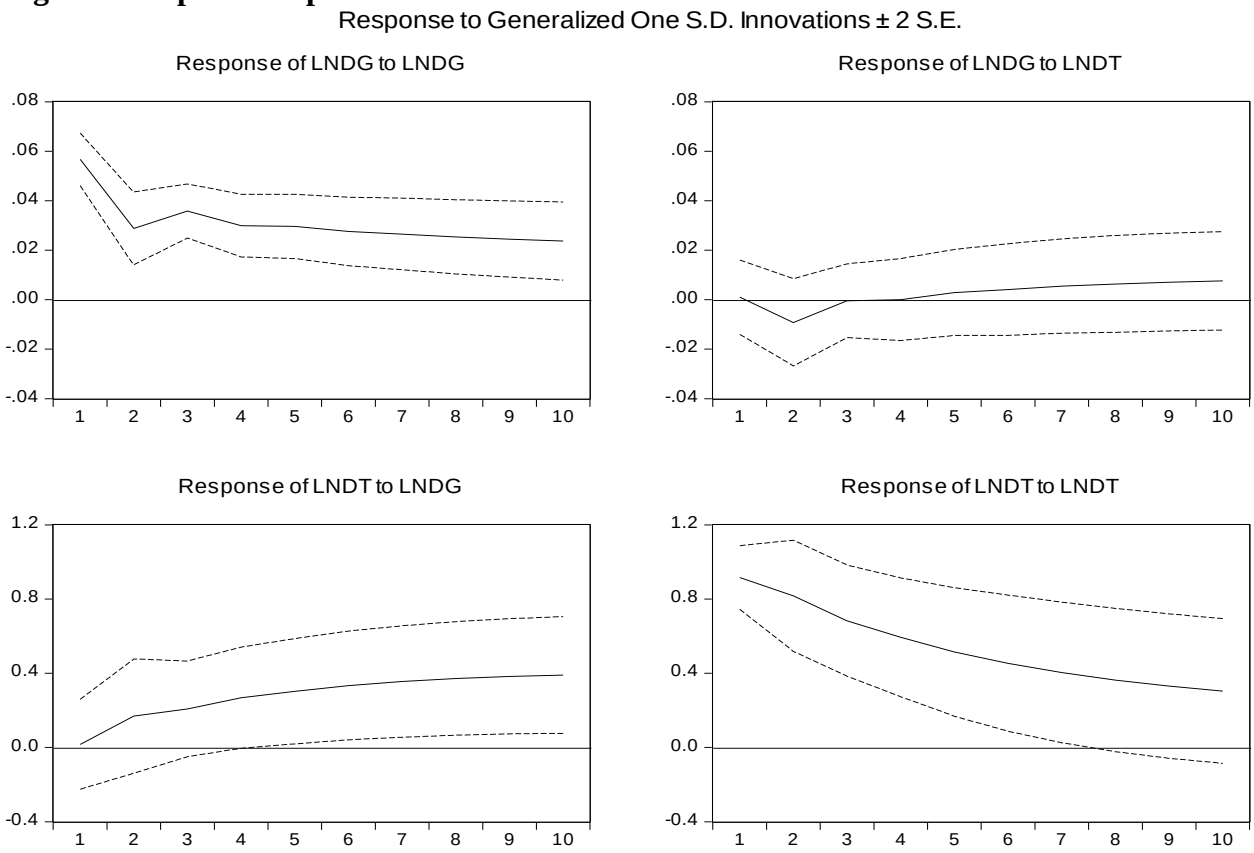
Table 3: Optimal Lag Length

Lag	LogL	LR	FRE	AIC	SC	HQ
0	-104.4942	NA	0.177016	3.944231	4.017898	3.972642
1	3.369732	203.7431	0.003780	0.097417	0.318416	0.812648
2	9.037579	10.28609	0.003556	0.035645	0.403976	0.177696
3	11.89397	4.972230	0.003717	0.078001	0.593664	0.276872
4	28.06029	**26.94386***	**0.002377***	**-0.372603***	**0.290392***	**-0.116912***
5	31.31564	5.184458	0.002456	-0.345024	0.465303	-0.032513

** indicates lag order selected by the criterion*

Impulse Response Functions

Figure 2: Impulse Response Function



Source: Authors compliance and values from Eviews

Figure 2 shows the response of economic growth (DG) to shocks in taxation (DT). The results show that economic growth responds negatively to such shocks and the variable moves toward the equilibrium as the horizon increases. The effects appear to be permanent due to the fact that the variable found a new level of equilibrium as it did not return to its initial level of equilibrium. These findings are in agreement with the expectation that increase in tax revenue will decrease economic growth. These findings are similar to those of (Canavire-Bacarreza, Martinez-Vazquez and Vulovic, 2013). In analysing the relationship between tax policy and economic growth, they found that tax in the more developed countries had a negative impact on economic growth.

Forecast Error Variance Decomposition

Table 4: Forecast Variance Decomposition

Variance Decomposition of LNDG period	S.E	LNDG	LNDT
1	0.042244	100.0000	0.000000
2	0.043761	96.41797	3.582028
3	0.044214	95.43703	4.562970
4	0.046163	88.55000	11.45000
5	0.054252	91.09013	8.909869
6	0.055986	89.59416	10.40584
7	0.056838	88.71225	11.28775
8	0.058242	86.35352	13.64648
9	0.062110	87.12973	12.87027
10	0.063795	86.46208	13.53792

Source: Author compliance and values from Eviews

Table 4 shows the results for the forecast variance decomposition.The forecast error variance decomposition for economic activity is mostly attributed to itself in the first quarter. In the second quarter taxation accounts for about 3.5% change in economic activity. In the fourth quarter, tax accounts for more than 10% of the change in economic activity. In the sixth quarter tax attribution to economic activity reduces to 8.9% and in the eighth and tenth quarter it rises by approximately 5%.

CONCLUSIONS

This study examined the relationship between tax and economic growth in Namibia. The study employed a vector autoregression model on the quarterly data covering the period 2001 to 2015. In addition, other time series techniques such as unit root, cointegration, impulse response functions and forecast error variance decomposition were also employed where appropriate. The results for the unit root test revealed a combination and mixture of different order of integration. The results for cointegration showed that there is no existence of long-run relationship among the variables. Therefore, long-run analysis could not be conducted, only the short-run analysis. The impulse response function test shows that taxation has immediate negative effect on economic growth and these effects appear to be permanent in nature. The results of the forecast error variance decomposition indicates that fluctuations in economic activity is mostly attributed to itself, and those caused by tax are moderate. The empirical results support the theory that the use of a regressive tax system is harmful and implementation of a progressive one maybe a better alternative. Furthermore, so as not to worsen the disparities problem in Namibia it is therefore, essential and noteworthy to be aware of who is being taxed and the tax reform and policy mix.

It has been established that taxation increase leads to a decrease in economic growth. The tax system in Namibia is 51% regressive tax (Rademacher and Stiftung, 2011), implying high taxes are imposed on low income earners as well as high income earners. Therefore, in light of the above, the study recommends a progressive and demand-side oriented, also guided by the ability-to-pay principle, individuals that are richer pay more and the lower income earners pay as per their capability. The other possible solution would be to increase tax administration to increase efficiency, and increase investment through reduction of taxes.

This would also remedy the problem of having insufficient suppliers to tax in such a system respectively (increases tax base).

The study had limitations due to the fact that it was based on a bivariate model. Future research can extend and use a multivariate model. Moreover, other econometric approaches could be used to compare the findings thereof.

REFERENCES

Acosta-Ormaechea, S., & Yoo, J. (2012) Tax Composition: A Broad Cross-Country Perspective. *IMF Working Paper*.

Canavire-Bacarreza, G., Martinez-Vazquez, J., & Vulovic, V. (2013) Taxation and Economic Growth in Latin America. *Inter-American Development Bank (IDB).*

Engen, E., & Skinner, J. (1996) Taxation and Economic Growth. *National Tax Journal,* 49, 617-642).

Forbin, E. (2011) Effects of Corporate Taxes on Economic Growth: The Case Of Sweden. Unpublished Bachelor's Thesis in Economics, Jonkoping University.

Freeman, R. (2006) Common Dreams: Breaking News & Views for the Progressive Community. [Accessed 26th March 2016] Available from World Wide Web: http://www.commondreams.org/views06/0514-20.htm

Honde, G. J., & Odhiambo, O. (2014) *African Economic Outlook*. Retrieved March 25, 2016

Jauch, H., Edwards, L., & Cupido, B. (2009) A Rich Country with Poor People. Inequality in Namibia. Windhoek, LaRRI.

Kennedy, M. M. J. (2012) *Public Finance*. Philadelphia: PHI Learning Pvt. Ltd.

Macek, R. (2014) The Impact of Taxation on Economic Growth: Case Study of OECD Countries. *Review of Economic Perspectives*, 14, 309–328.

Manddala, G. S., & Kim, I. (1998) *Unit Roots, Cointegration, and Structural Change*. Cambridge University Press.

Mankiw, G. N. (2008) *Principles of Economics.* Cengage Learning

Mutascu, M. I., & Danuletiu, D. C. (2011) Taxes and Economic Growth in Romania. A VAR Approach. *Annales Universitatis Apulensis Series Oeconomica*, 13, 94-105.

Poulson, B. W., & Kaplan, J. G. (2008) State Income Taxes and Economic Growth. *Cato Journa,* 28, 53-71.

Rademacher, I. (2011) *Fiscal Policy and Growth: Boosting Employment and Competitiveness in Namibia*. Windhoek: Friedrich Ebert Stiftung – Namibia.

Rena, R. (2011) *Public Finance and Taxation.* Windhoek: Center for Life Long Learning, Polytechnic of Namibia.

Rena, R., & Kefela, G. T. (2011) Restructuring A Fiscal Policy Countries Economic Growth-A Case of Selected African Countries. *East-West Journal of Economics & Business*, XIV, 23-39.

Shome. P. (2004) Tax Administration and The Small Taxpayer. *IMF Policy Discussion Paper PDP 04/2.*

Thompson, C. F. (1992) *Swaziland Business Year Book.* Mbabane.

Tucker, I. B. (2010) *Economic for Today.* Charlotte: Cengage Learning.

Worlu, C. N., & Emeka, N. (2012) Tax Revenue and Economic Development in Nigeria. *Academic Journal for Interdisciplinary Studies*, 1, 211-222.

Yi, F., & Sunyono, E. (2014) The Relationship between Tax Revenue and Economic Growth of Hebei Provice Based on The Tax Multiplier Effect. *Global Economy and Finance Journal*, 7, 1-18.

Young, H. P. (1995) *Equity: In Theory and Practice*. New Jersey: Princeton University Press.