

Tax Rate and Tax Compliance: The Africa Experience

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Abstract

This study examines the effect the various tax rates (i.e., corporate tax, personal income tax and sales tax) have on tax compliance in the African nations. The tax-to-GDP ratio of these countries were used as a proxy for tax compliance and these data were obtained from the 2019 OECD revenue statistics in Africa, KPMG and trading economic sites. SPSS version 25 was used to run the regression analysis. The result reveals that the corporate tax rate has a negative and statistically significant effect on tax compliance level in Africa. The result also shows that the personal income tax rate and the sales tax rate have a positive effect on tax compliance. However, these effects are not statistically significant. The study concludes that an increase in corporate tax rate will lead to further tax non-compliance in African nations. Therefore, the study recommends that countries whose corporate tax rate is above the continent average of 28.21% and are experiencing non-compliance should reduce their tax rate to the mean tax rate.

Key Words: Tax compliance, Tax rate, Personal income tax, Sales tax, tax-to-GDP

1.0 Introduction

Tax is imposed primarily to generate revenue for the government to manage the economy. The revenue generated is used to provide incentives for certain activities, correct market failures, redistribute income and help reduce inequality. It serves as a major revenue source for most countries. In 2018, the tax collection as a percentage of Gross Domestic Product (GDP) for the world stood at 14.9%. The tax-to-GDP ratio of developed countries such as the United Kingdom, France, Denmark, New Zealand and South Korea in 2018, was 33.5%, 46.1%, 44.9%, 32.7% and 28.4% respectively. The average tax-to-GDP ratio for OECD countries in 2018 was 34.2% (OECD Revenue Statistics, 2019). On the other hand, the tax-to-GDP of developing countries, such as Nigeria, Ghana, and South Africa, in 2018 was 5.7%, 14.1% and 28.4% respectively. The average tax-to-GDP ratio for Africa in 2018 was 17.2% (Revenue Statistics in Africa, 2019). These statistics show the importance of the tax system as a major source of revenue for any government of both developed and developing nations. However, the main problem is how do the government maximize the collection of this revenue and reduce the level of non-compliance.

Developing nations are plagued with low tax revenue. They account for the lowest tax burden in the world. The tax system of most developing nations is characterized with a relatively small tax base, inefficiency of tax collection, high tax non-compliance behaviour, weak personal income tax/property tax, limited social security contribution and inefficient tax system and administration (Park, 2012). These could be responsible for the underdevelopment of these nations as lower taxes may constrain infrastructural investment to suboptimal levels and retard industrial development. Although taxpayer's non-compliance behaviour is a continual and growing global problem, many indications suggest that developing nations are the hardest hit (Cobham, 2005; McKerchar & Evans, 2009; Fuest & Riedel, 2009; Ali, Fjeldstad & Sjursen, 2013) Therefore, necessitating the need to broaden the tax bases, increase tax compliance rates and widen the role of VAT.

The taxpayer's non-compliance behaviour can be taken as a socially destructive issue which could reduce government revenue, distort labour market and weaken the stability of a state by feeding perception of cheating and fraud (Gelawu, 2019 and Desta, 2010). Tax compliance can be increase if the reasons for non-compliance are known and addressed. Thus, the relevant tax authority must understand the motivation underlying the non-

compliance behaviour of taxpayers towards voluntary compliance. This study aims to examine the effect of tax rates on tax compliance in Africa.

Several economic theories have highlighted the relevance of tax rate on tax compliance (Allingham & Sandmo, 1972; Srinivasan, 1973). Also, the tax system structure component of Fischer's model gave further insight that tax rate could influence tax compliance (Fischer, Wartick & Mark, 1992). Series of studies have also been carried out on the influence of tax rate on tax compliance producing mix results. Some Scholars found a negative association between tax rate and tax compliance (Tanzi, 1980; Whitte & Woodbury, 1985; Torgler & Murphy, 2004; Mas'ud, Aliyu & Gambo, 2014) others found a positive association with tax compliance (Clotfelter, 1983; Joulfaian & Rider, 1998; Alm, 1995; Alm & Torgler, 2006) and no significant link to tax compliance (Torgler & Schneider, 2007; Praeger & Torgler, 2007). However, most of these study focused on developed country. Only a hand full of studies have been carried out in developing countries (i.e. Abubakari & Christopher, 2013; Jayawardane, 2016; Torgler, 2005). Furthermore, none of these studies used cross country data except Torgler (2005) who examined tax morale in 17 Latin American countries and Mas'ud et al. (2014) who examine the correlation as well as the result of the tax rate on tax observance using cross-country data of 16 African country.

Following the submission of Freire-Seren and Panades (2013) that due to the mix results in the findings of prior studies on the effect of the tax rate on tax compliance, further research should be conduct to explore the connection. Therefore, this study is undertaken to provide more evidence on the influence of the tax rate on tax compliance.

This study will be of benefit to stakeholders in two ways. Firstly, the study will investigate which of the tax rates (i.e. corporate tax rate, personal income tax rate and sales tax rate) have a strong and significant influence on tax compliance. Unlike Mas'ud et al. (2014) who only used corporate tax rate as a proxy for tax rate. Secondly, the study will use more current cross-country data which take into consideration the various tax reforms carried out by some countries in the study population.

2.0 Literature Review and Hypotheses Development

Tax Compliance

Tax compliance has been a major issue not only to less developed countries but also to the developed ones. Several scholars such as Alm (1991), Jackson and Milliron (1986) and Kirchler (2007) defined tax compliance as the extent to which individuals willingly comply with the relevant tax laws of a state in terms of income declaration, filing a return and a tax due on time. It is fulfilling all tax obligations as specified in the national tax law freely and completely (Ketema, 2016). It is the goal of tax administrators to secure voluntary compliance and reduce the tax gap between what taxpayers declared on their return and pay and that which they ought to have paid. Following the fall in prices of commodities in the global market, most commodity-dependent economies have started looking inwards. Tax managers have been mandated to widen the tax base and increase the compliance rate (Mas'ud, Aliyu & Gambo, 2014).

Theoretical Review

The Economic Theory of Tax Compliance

This theory was developed following the theorized economics of crime propounded by Gary Becker, a Nobel laureate economist, in 1968 and it is credited to the works of Allingham and Sandmo (1972). They developed an economic model (the AS model) to tackle the challenge of income tax evasion, the main source of revenue in both developed and developing countries. The theory holds that the level of tax non-compliance depends on three deterrent variables, which are tax rate, the detection probability and the level of punishment provided by

law. Although the AS model sets the foundation for understanding taxpayers' compliance behaviour nevertheless, it has come under heavy criticism from scholars such as Alm, Jackson and McKee (1992), Alm (1999) and Torgler (2002), for the non-inclusion of some sociological and psychological factors that could motivate tax compliance without enforcement. Notwithstanding, some studies have shown that tax rate has remained an important determinant of taxpayers' compliance behaviour as highlighted in theory (Kirchler, 2007; Abubakari & Christopher, 2013; Jayawardane, 2016). The relevance of this theory in this study is the insight it gave on the importance of tax rate in tax compliance attitude of taxpayers.

Hypotheses Development

There are numerous factors which affect tax compliance attitude of taxpayers. Batrancea, Nichita and Batrancea (2012), Tilahun (2018) and Deyganto (2018) examined some of these socio-psychological, political and economic determinants which Sharpe taxpayers' compliance attitude and underline tax rate as a key determinant. Several pieces of research have been conducted on the influence tax rates have on tax compliance attitude of taxpayers. However, the studies produced mixed results. For example, Whitte and Woodbury (1985) found a rise in the marginal tax rate will likely increase more tax evasion. It was also discovered that increase in tax rate causes high tax non-compliance (Hai & See, 2011), and strengthens taxpayers' motive to report less income to compensate for the reduced income (Park & Hyun, 2003). Also, Torgler (2005) conducted a study of tax morale in some Latin American nations. He found that more than 46% of his respondents perceived a high tax burden to be the reason people refuse to pay taxes. These findings were also collaborated by those of Mas'ud, et al. (2014). They examined the correlation, as well as the effective tax rates, have on tax compliance in Africa. Using cross-country data from 17 African countries, they found a negative and significant relationship between tax rate and tax compliance. However, Both Clotfelter (1983) and Joulfaian and Rider (1998) found taxpayers' underreporting attitude to be positively correlated with a high tax rate.

In another study, Alm (1995), Praeger and Torgler (2007), Abdul-Razak and Adefula (2013) and Deyganto (2018) got contrary results. Alm (1995) found a high tax rate to have a positive effect on tax compliance. The study discovered taxpayers to be more responsive as the tax rate increases. Praeger and Torgler (2007) on the other hand, found no relationship between the two variables. The evaluation study carried out by Abubakari and Christopher (2013) on taxpayers' attitude and its resultant effect on tax compliance decision revealed that individual taxpayers are seriously concerned about the amount of taxes they pay. The burden of taxes paid affects their attitudes and thus, informed their compliance decisions. However, they found a strong positive correlation between the perceived level of the tax burden and the taxpayers' compliance decision. Also, Deyganto (2018) discovered that taxpayers' perception of tax rate has a positive and significant association with voluntary compliance attitude. Based on the above, the following hypotheses are formulated:

H₀1. The corporate tax rate does not have a positive effect on tax compliance in Africa

H₀2. The personal income tax rate does not have a positive effect on tax compliance in Africa

H₀3. The sales tax rate does not have a positive effect on tax compliance in Africa.

3.0 Methodology

The population of this study consists of all the 61 countries in Africa. The simple random sampling technique was used to select the sample. These countries were selected base on the availability of data. All countries were given an equal chance of being selected. However, some countries dropped because of non-availability of data for one or all the variables under investigation, leaving us with a sample size of 26 countries. According to Babyak (2004), this sample size is adequate to run a regression analysis. He states that 10 – 15 observations for each predictor variables allow a good estimation of a regression model

The dependent variable which is Tax Compliance (TaxCom) was measured using tax revenue collected as a percentage to Gross Domestic Product (GDP) (tax-to-GDP) for each of the countries under review. These data were obtained from the OECD Revenue Statistics in Africa 2019. On the other hand, the independent variable, corporate tax rate, Personal Income Tax rate and sales tax rate were used as a proxy for Tax Rate. The data was obtained from KPMG and Trading Economic for the year 2020.

Data collected from the sources stated above were analysed using the ordinary least square method. This analysis was done using SPSS version 25. The following research model was formulated in line with the hypotheses developed for the study:

$$TaxCom = \beta_0 + \beta_1 CTRate + \beta_2 PITRate + \beta_3 STRate + \mu \dots \dots \dots I$$

Where:

TaxCom is tax compliance rating for a country

CTRate is the corporate tax rate for each country

PITRate is the personal income tax rate for each country

STRate is the sales tax rate for each country

β_0 is constant

$\beta_1, \beta_2, \beta_3$ are coefficients

μ is the error term

4.0 Results and Discussion

Table 4.1, descriptive statistics, depicts the minimum, maximum, mean and standard deviation of the tax compliance and tax rates in Africa. It can be deduced that the minimum tax compliance rate and tax rates (corporate tax, personal income tax and sales tax) in Africa for the countries surveyed are 5.70%, 15%, 15% and 7.5% respectively. The maximum rates, on the other hand, are 31.20%, 35%, 60% and 20% respectively. The average tax compliance rate in Africa is 15.27%. The average corporate tax rate, Personal Income Tax rate and Sales Tax rate of African countries are 28.21%, 30.91% and 16.31% respectively.

Table 4.1 Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
TaxCom	26	5.70	31.20	15.2688	6.41564
CTRate	26	15.00	35.00	28.2115	4.75851
PITRate	26	15.00	60.00	30.9123	10.07519
STRate	26	7.50	20.00	16.3135	2.83138
Valid N (listwise)	26				

Table 4.2 depicts the Pearson correlation matrix for the dependent and independent variables.

Table 4.2 Correlations

	TaxCom	CTRate	PITRate	STRate
Pearson Correlation	TaxCom	1.000	-.286	.301
	CTRate	-.286	1.000	.301
				.206

	PITRate	.301	.301	1.000	.368
	STRate	.309	.206	.368	1.000
Sig. (1-tailed)	TaxCom	.	.078	.068	.062
	CTRate	.078	.	.068	.157
	PITRate	.068	.068	.	.032
	STRate	.062	.157	.032	.
N	TaxCom	26	26	26	26
	CTRate	26	26	26	26
	PITRate	26	26	26	26
	STRate	26	26	26	26

The result from table 4.2, indicates that a relationship exists between tax compliance and tax rates in Africa. This relationship is statistically significant at 10% ($p < 0.1$) 1-tailed test. The correlation coefficient of -0.286 for CTRate shows that the relationship between tax compliance and the corporate tax rate is negative. This means that an increase in corporate tax rate will lead to a decrease in tax compliance. These findings agreed with those of Whitte and Wood (1985) and Park and Hyun (2003), who found that increase in tax rate will most likely encourage more tax evasion, and strengthen taxpayers' motive to report less income. However, the findings above contradict those of Clotfelter (1983), Joulfaian and Rider (1998) and Abubakari & Christopher (2013). They both found taxpayers' underreporting attitude to be positively correlated with a high tax rate. Also, the 0.301 and 0.309 correlation coefficient for PITRate and STRate denote a positive relationship between tax compliance and personal income tax rate and sales tax rate of African countries. However, these relationships are low and negligible.

To test for the hypothesized effect that the predictors (corporate tax rate, personal income tax rate and sales tax rate) have on the dependent variable (tax compliance), the ordinary least square regression analysis was conducted. The output from this analysis, a beta coefficient, provides an assessment of the significance, the effect of the predictor variables on the dependent variable and the R square which indicates the model fitness. The predictor variables may have a positive or negative coefficient, which describes the nature of the effect they exert on the dependent variable. The predictor variable with negative coefficients exerts a negative impact on the dependent variable and vice versa.

The result in table 4.3 shows that the predictor variables accounted for 31% of the variance in tax compliance ($R^2 = 0.312$). This implies that the predictor variables in this study can explain 31% of changes in the dependent variable. We can infer that the variation left unexplained (69%) was caused by the exclusion of other predictor variables from the model that affect tax compliance. This means that other factors that are not studied contribute to the 69% variation in the tax compliance of African countries. The F-statistics of 3.328 with a p-value of 0.038 in table 4.4, which is less than 0.05, is an indication that the model is fit at 5% level of significance.

Table 4.3 Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.559 ^a	.312	.218	5.67209	2.545

a. Predictors: (Constant), STRate, CTRate, PITRate

b. Dependent Variable: TaxCom

Table 4.4 ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	321.213	3	107.071	3.328	.038 ^b
	Residual	707.798	22	32.173		
	Total	1029.011	25			

a. Dependent Variable: TaxCom

b. Predictors: (Constant), STRate, CTRate, PITRate

Table 4.5 contains the results for the regression analysis conducted to examine the effect of tax rates on tax compliance in Africa countries and to test the hypothesis formulated for this study. The result reveals that the corporate tax rate (CTRate) has a negative coefficient of -.443 and P-value of 0.027, which is less than 5% significant level. This implies that the corporate tax rate exerts a negative and significant effect on tax compliance in Africa. A rise in corporate tax will lead to a decrease in tax compliance. This finding is line with those of Mas'ud, et al. (2014) who found a negative and significant relationship between tax rate and tax compliance. This result supports the Null hypothesis: H_0 . The corporate tax rate does not positively impact tax compliance in Africa. Therefore, we accept the Null hypothesis.

Table 4.5 Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Correlations			Collinearity Statistics	
		B	Std. Error	Beta			Zero-order	Partial	Part	Tolerance	VIF
1	(Constant)	15.318	8.616		1.778	.089					
	CTRate	-.597	.251	-.443	-2.375	.027	-.286	-.452	-.420	.899	1.112
	PITRate	.211	.125	.332	1.690	.105	.301	.339	.299	.812	1.232
	STRate	.630	.433	.278	1.453	.160	.309	.296	.257	.855	1.170

a. Dependent Variable: TaxCom

Furthermore, the coefficient of 0.332 and 0.278 for PITRate and STRate with a P-value of 0.105 and 0.160, indicates a positive effect on tax compliance. This implies that as the tax rate increases the tax compliance will also increase. However, this effect is not statistically significant at $P \leq 0.05$. Therefore, we reject the Null hypothesis that personal income tax rate does not positively impact tax compliance in Africa and sales tax rate does not positively impact tax compliance in Africa.

5.0 Conclusion, Recommendation and Limitation

The study examined the effect of the tax rate on tax compliance level in Africa. The Corporate tax rate, personal income tax rate and sales tax of 26 African countries were examined alongside their tax to GDP ratio to determine which of these rates significantly influence tax compliance level in Africa. Based on the hypotheses formulated and the regression analysis performed, the following results were obtained: the corporate tax rate (CTRate) has a negative and statistically significant effect on tax compliance (TaxCom) in Africa. The personal income tax rate (PITRate) and sales tax rate (STRate) have a positive and statistically insignificant effect on tax compliance in Africa. The study concludes that an increase in corporate tax rate will lead to further tax non-compliance. Therefore, the study recommends that those African countries whose tax rate is above the continent average of 28.21% and are experiencing non-compliance should reduce their tax rates to the mean tax rate.

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