TAX RATE AND TAX COMPLIANCE IN AFRICA

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ABSTRACT: *The paper examines the correlation as well as the effect of tax rate on tax compliance in Africa using cross-country data. The study used all the African countries as population, upon which sample were selected using multi-stage approach. Data was analyzed using SPSS version 19. The findings showed that there is significant negative correlation between tax rate and tax compliance and tax rate has a negative effect on tax compliance. Thus, it is recommended that since average tax rate is 29.1985% in Africa, countries with tax rates above average that are experiencing noncompliance should reduce their tax rate to the mean tax rate in Africa. It is further recommended that future researchers on the subject should consider the increase in the sample size and observation years as data becomes available so as to increase the robustness of findings.*

KEYWORDS: tax rate; compliance; evasion; noncompliance.

INTRODUCTION

The paper examines the correlation as well as the effect of tax rate on tax compliance in Africa using cross-country data. Economic theories of Allingham & Sandmo (1972) and Srinivasan (1973) of have highlighted the relevance tax rate on tax compliance. Similarly, Fischer et al (1992) model through its tax system structure component has also given insights that tax rate can have an effect on tax compliance. More recently, however, it was suggested that due to inconclusive findings on the effect of tax rate on tax compliance, researcher should continue to explore such relationship (Freire-Serén & Panadés, 2013). Therefore, it is in line with these insights from the relevant theories and literature that this study is undertaken to provide more evidence on the effect of tax rate on tax compliance.

The body of knowledge will benefit from this study in two ways. One, the study will investigate the effect of tax rate on tax compliance using cross-country data, as far as this study there is only one study by Richardson (2006) which investigate the effect of tax rate on tax compliance among other variables using cross-country data. The finding from Richardson (2006) on such effect was insignificant; hence the need for further investigation since many of the studies that used other forms of data found a significant effect. Two, Richardson (2006) used data from advanced OECD countries; in contrast this study uses data from developing African countries. Thus, the study contributes to the current literature by extending the use of cross-country data on the effect of tax rate on tax compliance to cover developing African countries.

The study is divided into five sections; this part is an introduction. The second part is a literature review. The third part is methodology. The fourth part is result and discussion. The last part is conclusion and suggestion for future studies.

LITERATURE REVIEW

Tax Compliance Behavior

Tax compliance has been defined as reporting of tax liability to the relevant authority in compliance with applicable tax laws, regulation and court (Jackson & Milliron, 1986). It has also been defined as a process in which taxpayers file all the required tax returns by declaring all income accurately and paying the exact tax liability using applicable tax laws and regulation (Palil & Mustapha, 2011b). However, tax compliance can be in two forms; administrative and judicious compliance. Administrative compliance refers to compliance with the applicable tax laws as stipulated in the relevant regulations whereas judicious compliance refers to the accuracy in filling the tax return forms (Chow, 2004). Compliance can be through enforcement by relevant authorities or through voluntary willingness of the taxpayers (Kastlunger, Lozza, Kirchler, & Schabmann, 2013; Kirchler, Hoelzl, & Wahl, 2008; Kirchler, Hofmann, & Gangl, 2012; Kogler et al., 2012; Muehlbacher, Kirchler, & Schwarzenberger, 2011; van Dijke & Verboon, 2010; Wahl, Kastlunger, & Kirchler, 2010). The tax compliance enforcement is through powers conferred on the relevant authorities to force the taxpayers to pay while voluntary means by morality of the taxpayers to pay tax willingly. Thus, voluntary tax compliance has been defined as filling and reporting of tax returns, correct self-assessment of tax due and payment of taxes before or on the due date without enforcement (Silvani & Baer, 1997, p. 11).

Tax compliance and evasion is a global phenomena hassling both developed and developing countries. Though the level of tax evasion and noncompliance on average is much more in developing and transition countries than developed countries (Kim, 2008). In developing African countries, there is no obtainable statistics on tax evasion scores. However, there exist some statistics such as tax collection as a percentage of GDP. In comparing these tax evasion scores of developing African countries with that of developed and transition countries, it is evident that tax evasion is worst in African developing States (Kim, 2008), because, significant numbers of countries have 1 scores compared to very few in transition economies and none of the developed nations that have 1as it tax evasion score. Another statistic put the average tax evasion in developing countries as at 2002 between 35% and 55% of the Gross Domestic Product (GDP), which is worse than that of developed nations like US (Terkper, 2003). Moreover, for personal income tax about 95 percent of personal income tax in developing countries come from the formal sector through withholding tax (PAYE) deducted by public sector and large firms in the salaries and wages of its employees, compared to 80 percent in developed nations (International Monetary Fund, 2011, p. 31). This source further stated that less than 5 percent of the population in developing countries paid personal income tax compared to about 50 percent in developed nations. Furthermore, only about 15 of taxpayers' income are reached in developing countries for tax purposes compared to about 57 percent in developed countries. Moreover, comparison of personal income tax as a percentage of GDP reveals that for the period of 1980-2005 personal income tax is 9-11 percent of GDP in developed countries compared less than 2 percent in developing

countries (Sabirianova Peter, Buttrick, & Duncan, 2009, pp. 24-25). These analysis highlights the need to investigates factors responsible for poor tax compliance in some African countries.

Economic Theory of Tax Compliance

Economic theory of tax compliance is said to have originated from the work of Allingham & Sandmo (1972) and Srinivasan (1973) which were based on economic of crime models. The models posit tax compliance as a function of three deterrent variable; tax rate, tax audit and probability of detection. Though it set the foundation for understanding the compliance behavior but has been criticized by non-inclusion of psychological and sociological factors that have the *"intrinsic motivation"* of taxpayers compliance without enforcement (Alm, 1999; Alm, Jackson, & McKee, 1992; Torgler, 2002). In line with the critics of the traditional model of tax compliance, (Yitzhaki, 1974) extended the Allingham and Sandmo model by imposing penalty on the tax understatement, as opposed to income underreporting. Hence, the extension of the traditional model by Yitzhaki, did not make the model so robust in explaining why people pay tax even in the absence of penalty and probability of detection (Alm, 1999; Alm, et al., 1992; Slemrod & Sorum, 1985; Torgler, 2002). Further extension of the traditional model was made by (Sour, 2004) who included individual morality and group conformity. However, the main issue is that tax rate has still remained an important determinant of that compliance as highlighted by the theory.

Fischer et al Model of Tax compliance

Fischer et al (1992) used fourteen variables identified by Jackson and Milliron (1986) in formulating tax compliance model (Chan, Troutman, & O'Bryan, 2000). The model regroups those fourteen factors into four groups comprising of demography of taxpayers, non-compliance opportunity, attitude and perceptions and tax system/structures. The model incorporates demographic variables; age and gender. It also includes noncompliance opportunity variables e.g. education, occupation, income level and income source. It further adds attitudes and perceptions e.g. taxpayer's moral reasoning and attitude and perception toward tax system. Nevertheless, it incorporates tax system structures e.g. tax rate, detection probability, tax system complexity, contact with tax authority and sanctions. Fischer et al model has contributed immensely in tax compliance research and underpinned many studies such as Palil (2010), Palil and Mustapha (2011b), Palil & Mustapha (2011a) and Alabede, Ariffin and Idris (2011). The important of this model in this study is that it gives insights into the importance of tax rate on tax compliance under the tax system structures.

Tax Rate and Tax Compliance

Several studies examine the effect of tax rate and tax compliance. Most of the studies found that the high tax rate causes high tax noncompliance (Hai & See, 2011). In their submission, Spicer & Becker (1980) found that taxpayers who are aware that their tax rate is higher than average tax rate paid by other have higher records of tax evasion. By implication, the perception by taxpayers that pay high tax rate is that they can outweigh their overpayment through tax evasion. Similarly, it was also found that taxpayers' underreporting behavior is positively correlated with high tax rate (Clotfelter, 1983; Joulfaian & Rider, 1998). More evidences show that the high tax rate is positively related to tax evasion and negatively related to tax compliance (Ali, Cecil, & Knoblett, 2001; Christian & Gupta, 1993; Feinstein, 1991).

Moreover, though majority of literature showed that the high tax rate is positively related to tax evasion and negatively related to tax compliance, other studies found either no relationship or in fact even positive relationship between tax rate and tax compliance. Thus, in a recent study in one of the African countries, the findings show that tax rate do not have any positive or negative effect on tax compliance (Modugu, Eragbhe, & Izedonmi, 2012). The fact is that the respondents, so the studies are undecided on the effect of tax rate on tax compliance. Other studies found a negative relationship between tax rate and tax evasion or positive relationship between tax rate and tax compliance (Alm, Sanchez, & De Juan, 1995; Feinstein, 1991).

Moreover, the effect of tax rate on tax compliance is not only limited to country specific data; evidences are also obtainable in cross-country analysis. In a cross-country analysis of determinants of tax evasion internationally conducted with the OECD countries evidences showed that there is insignificant correlation between marginal tax rate and tax evasion (Richardson, 2006). However, the only study comes across by the current study which examines the effect of marginal tax rate on tax evasion or tax noncompliance.

From the foregoing review, it is evident that there are mixed findings on the relationship between tax rate and tax compliance. In fact, other studies have confirmed this trend of conflicting finding (Richardson, 2006). Thus, it is suggested that since the economic literature on the effect of tax rate and tax compliance is not conclusive due mixed findings by various studies, the issue still require further investigation (Freire-Serén & Panadés, 2013). Thus, it is based on this suggestion that this study is undertaken to provide more evidence on the effect of tax rate on tax compliance. The study is different in two ways. One, it is carried out in developing Africa countries were evidence are lacking. Two, it is cross-country analysis in nature as the current study comes across only one study that examine the effect of tax rate on tax compliance. Thus, using cross-country analysis to examine this relationship will provide more facts on the influence of tax rate on tax compliance. Therefore, in line with the literature and suggestion by other studies the following hypothesis is formulated.

H1 Corporate tax rate has significant negative correlation with tax compliance in Africa.
H2 Corporate tax rate has significant negative effect on tax compliance in Africa.

METHODOLOGY AND METHODS

This section described the methodology and methods followed in conducting the study, the population and sample size, variables and variables measurements data and data analysis techniques, as well as the research model.

Population of the study
The population of the study covers all 61 countries Africa for two observation years of 2012 and 2013. This makes total observations of 122 years. Sample was selected using simple random sampling. In this selection process, at the first instance all countries were given an equal chance of being selected, thus, some countries were dropped due to lack of consistent data for one or all the variables under investigation. More countries were dropped for been outliers; leaving us with 17 countries. Hence, we arrived at final sample of 34 observation years. This sample is considered

adequate to run a regression. Babyak (2004) asserts that 10-15 observations for each predictor variables allow a good estimation of a regression model. Thus, since this study has single predictor variable 34 years observation is more than enough to run a simple regression.

Variable and their Measurements

The dependent variable which is tax compliance was measured using tax as a percentage of Gross Domestic Product (GDP) for each of the countries under the study. This data was obtained from United State Central Intelligence Agency (US-CIA) database World Fact Book for the year 2012 and 2013. For the independent variable tax rate, corporate tax rate was used as a proxy the data was obtained from KPMG for the years 2013.

Data and Data Analysis Techniques

Data from the relevant sources is depicted in table 3.1 below. It would be analyzed through simple regression using SPSS version 19.

Table 3.1 Data for Dependent and Independent Variables

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Research Model

In line with the above dependent and independent variables and the hypothesis developed in section 2, the following research model is formulated:

$$TC_i = \beta_0 + \beta_1 CTR_i + \mu_i \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 1$$

Where TC_i is tax compliance rating for a country, β_0 constants, CTR_i Corporate Tax Rate and μ the error term.

RESULT AND DISCUSSION

Table 4.1 presents the Pearson correlation matrix between the dependent and independent variable and table 4.2 presents the linear regression results.

Table 4.1 Pearson Correlation

les		TC	CTR
TC	Pearson Correlation	1	-.446
	Sig. (2-tailed)		.073*
	N		17
CTR	Pearson Correlation	-.446	1
	Sig. (2-tailed)	.073*	
	N	17	

*correlation significant at 10%

Table 4.2: Linear Regression Result

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significance	

Dependent Variable: TC
* Significant at α = 0.10; ** Significant at α = 0.05

Table 4.3: Descriptive Statistics

	N	Minimum	um		Std. Deviation
CTR	17	18.10	35.00	29.1985	5.05789

From table 1, it can be analyzed that there is a moderate negative correlation between tax rate and tax compliance in Africa. Correlations of 0.90-1.00; 0.70 - 0.90; 0.50-0.70; 0.30-0.50 and 0.00 - 0.30 are considered very high; high; moderate; low and negligible respectively (Mukaka, 2012). Therefore, the correlation in this study which is -0.446 can be considered low negative correlation between tax rate and tax compliance in Africa. Moreover, the correlation is significant 10% 2-tailed test. Hence, the result from our correlation analysis supports the hypothesis one that tax rate has significant negative correlation with tax compliance in Africa.

To examine the effect of tax rate and tax compliance in Africa we conduct a regression analysis using SPSS version 19, this is depicted in table 4.2. The result for the linear regression on the effect of tax rate and tax compliance was negative and significant at 0.10 (*t= - 1.928, p = 0.073*). Moreover, R^2 of 0.02; 0.13 and 0.26 for a regression model with single predictor variable are considered weak, moderate and substantial (Cohen, 1988). Therefore, the R^2 for the regression model in this study which is 0.145 can be considered moderate. Hence, the result support our hypothesis that tax rate has significant negative effect on tax compliance in Africa.

Table 4.3 depicts maximum, mean and minimum tax rates in Africa, which is obtained from descriptive statistic of SPSS statistical package using the data in table 3.1. It can be seen from table 3.1 that the maximum tax rate in Africa for the countries analyzed is 35%, mean is 29.1985%, and minimum is 18.10%.

CONCLUSION

The paper examines the correlation as well as the effect of tax rate on tax compliance in Africa using cross-country data for 2012 and 2013. The finding from the study shows that tax rate has significant positive correlation with tax compliance in Africa. The result further shows that tax rate has significant negative effect on tax compliance in Africa. Therefore, on the basis of these findings and based on descriptive statistic results in table 4.3 we recommend that those countries which low tax compliance couple with high tax rate can adjust their tax rate to the mean value of 29.1985% or approximately 29.2%. This mean value is the average of maximum tax rate of 35% and minimum tax rate of 18.10% in Africa as obtained from Table 4.3. We also recommend that future studies in this subject in Africa should consider the increase in countries' sample size and observation years based on the availability of data.

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