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RESEARCH ARTICLE

EFFECT OF TAX SYSTEM FAIRNESS ON TAX COMPLIANCE BEHAVIOUR OF CORPORATE TAXPAYERS IN KENYA

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ABSTRACT

Literature indicates that there are four dimensions of tax fairness: horizontal equity, vertical equity, exchange equity, and procedural fairness. Although research suggests that compliance usually increases with tax fairness, this study sought to uncover the individual impact of each dimension of tax fairness on different perspectives of compliance. Using survey data obtained from medium and large corporate taxpayers in Kenya and employing a structural equation modelling technique, we find that procedural fairness is significant in influencing tax compliance among business taxpayers in Kenya. However, its different measures impact on the various dimensions of tax compliance differently. We also find that the different dimensions of tax compliance are influenced differently by the control variables. As such, policies to enhance compliance in Kenya would require a multi-faceted approach that critically takes on board what has traditionally been considered as tax fairness measures-since some measures in fact worsen compliance levels, contrary to expectations.

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INTRODUCTION

The problem of noncompliance is a concern internationally and poses a challenging problem for policy makers, tax authorities and ultimately for society (McKerchar, 2001). Although taxes are central to the development agenda of Kenya, noncompliance remains a threat to the achievement of the country's tax revenue targets. Non-compliance represents lower revenue and results in a serious loss to governments and may also create an unfair burden on honest taxpayers leading to disrespect for the tax system. A higher-level of tax compliance is more sought after in the immediate term in developing countries, as the need for efficient government and the need for publicly provided goods and services are greater in these countries compared to developed countries. Nonetheless, the level of tax compliance in developing countries is generally lower than that of developed countries (Blackwell, 2000) To reduce noncompliance, deterrence has been the most widely utilized policy instrument of choice used by most tax authorities (Schneider, 2011). However a number of studies have acknowledged that enforcement is costly, and that most tax authorities have limited resources to address the scale of noncompliance in their respective tax jurisdictions (McKerchar, 2001; Frey, 2003). Consequently, there is an increasing need for tax researchers to focus on behavioural determinants of tax compliance, rather than rely on the traditional models, in order to better understand and address noncompliance in the current tax environment. Tax compliance can be broadly defined to mean a condition where taxpayers comply with the tax law (James and Alley, 2000) or generally described to imply a situation when "...taxpayers file all the required tax returns at the proper time and the returns accurately report tax liability in accordance with the rules, regulations and Court decisions applicable at the time at which the returns are filed" (Roth, Scholz and Witte; 1989). This study adopts this definition because it takes into account four basic tax compliance obligations, which include: i) registering for tax purposes; ii) submitting a tax return when legally obliged to do so; iii) disclosing all taxable income and making a proper claim for deductions on the tax return; and iv) settling the assessed tax by due dates (OECD, 2008). Models that explain tax compliance behaviour can be divided into two groups, economic and non-economic models. The economic theoretical models identify several factors that affect tax compliance behaviour, including opportunity to evade, deterrence, and detection rates (Joulfaian and Rider, 1998; Porcano, 1988; Park and Hyun, 2003; Alm and McKee, 2006; Slemrod, 2007). The implication of these models is that when there are low audit probabilities and low penalties, the tendency for evasion will be higher, while if there is a high tendency for detection and penalties are severe, fewer people

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will evade taxes (Fjeldstad *et al*., 2012). However, the economic models have been criticized for predicting general substantial noncompliance beyond what is obtainable in reality (Slemrod, 2007). Rethi (2012) and Slemrod (2007) observed that despite of the existence and use of audits and penalties, tax evasion has remained, and continuously pose significant threats to countries' economies, through loss of revenue. Apart from the limitations noted above, the deterrence models have also faced criticism for failing to consider behavioural factors such as attitudes, perceptions, and moral judgments (Lewis, 1982); and for neglecting the fact that tax compliance takes place in a social context (Rethi, 2012).

Several non-economic factors have been identified as having an effect on tax compliance. Fairness, complexity, subjective norms and attitudes have been identified as important determinants of tax compliance behaviour (Beck *et al*., 1991; Porcano, 1988; Ajzen, 1991; Orviska and Hudson, 2002). Behavioral factors are however difficult to study as they are affected by several demographic factors such as age, gender and religiosity. Thus what helps one population may be a deterrent to another (Torgler, 2003). This could be the reason for the inconsistence in findings of several studies where certain studies, Sapiei, Kasipillai and Eze (2014) found certain demographic factors as significant while others such as Jabbar (2008) found factors such as business age, and industry sector to be inconclusive. Behavioral factors are more difficult to study due to the unavailability of data to confirm research findings. Certain factors such as attitudes, education, subjective norms, etc, have been found to be significant but to what extent these factors affect compliance is a question which cannot be answered without actual compliance data (Jabbar, 2008). Most of the previous tax compliance studies have largely been conducted in developed countries mainly in the US, UK and Australia. There is still very little literature on tax compliance behaviour in Africa particularly regarding corporate taxpayers. It is suggested that the reason for the lack of tax compliance studies could be due to the differences between tax systems in developed and less developed countries (Bird *et al*., 2008, p. 57). Some of the factors identified in these studies are relevant for African countries but there is a need to identify specific variables using data in African countries to help tax authorities to tailor-make policies to suit their own countries. In addition previous studies have focused more on the individual rather than the corporate taxpayer. However, several tax researchers (Rice, 1992; Slemrod, 1997; Joulfaian, 2000) have acknowledged that prior tax compliance studies on individuals provide a formal framework for the analysis of corporate tax compliance decisions. Kamdar (1997) argues that further work is necessary before drawing any conclusion on corporate tax compliance behaviour. In addition, Chan & Mo (2000) claim that as corporate non-compliance requires multiple parties to behave strategically, evidence on individual tax noncompliance behaviour cannot be directly extrapolated to corporate tax behaviour. More appropriate, non-human factors, applicable to the corporate taxpayer, such as business profile, business size, industry and financial performance measures should be considered (OECD, 2004, p. 40).

Because of the significant contribution of corporate taxpayers to overall revenue collected in Kenya, this study seeks to investigate the effect of tax fairness on compliance behaviour among this group of tax payers. This will help KRA to design tax policies that can enhance compliance among business tax payers.

Research Objectives

The broad objective of this study to establish how tax fairness and firm-level demographic factors influence tax compliance behaviour in Kenya by focusing on an important group of taxpayers in Kenya- the business taxpayers.

Specifically, the study:

i. Examines the impact of the different dimensions of fairness of the tax system on compliance behaviour of business taxpayers in Kenya; and
ii. Establishes evidence on how a firm's demographic characteristics such as age, turnover and tax liability influence its tax compliance behaviour.

Development of the hypotheses

Erich *et al*., (2006) observed that fairness perceptions can take various forms. First, vertical fairness, asserts that taxpayers with different economic situations should be taxed at different rates. This would result in higher income earners paying tax at higher rates than low-income earners. Second component is, horizontal fairness, defined as 'the equal treatment of equally circumstanced individuals'. In other words, horizontal fairness recommends that taxpayers of similar economic positions should pay the same amount of tax. From the definition one can assert that vertical fairness is a very subjective concept because the rich would deem it unfair for them to pay higher taxes just because they have higher income; they may even feel that they are being penalized for having a higher income. On the other hand it may be argued that in a developing country like Kenya which is still building its infrastructure it may be necessary to tax the rich more as the poor may not have sufficient taxable income. In addition to vertical and horizontal fairness, Reithel *et al*. (2007), identified procedural fairness which refers to whether or not the processes accompanying resource allocations are applied in an equitable manner, and in a tax context refers to whether the processes used by a tax authority are applied in an equitable manner. Another significant fairness dimension is exchange fairness discussed by Gilligan and Richardson (2005) and Gerbing (1988), which represents the exchange of contribution and benefit between taxpayers and government. This dimension of fairness holds that taxpayers will have fair perceptions of the tax system if the benefits received from the government are equitable compared to their tax contributions.

Slemrod (2007) notes that tax fairness literature tends to show a positive association between fairness and tax compliance. However studies from different countries indicate different results for individual fairness dimensions. Thus, a complete understanding regarding which dimensions of fairness are likely to impact compliance in various national contexts remains to be achieved. Saad (2009), Kirchler *et al.* (2006), Trivedi *et al*. (2003), and Wenzel (2002b) found a positive association between horizontal equity and tax compliance. Saad (2009) was set in Malaysia, Kirchler *et al*. (2006) and Wenzel (2002) in Australia, and Trivedi *et al*. (2003) in Canada. Vogel (1974), Maroney *et al*., (1998), Maroney *et al*. (2002), and Kirchler (2006) found a positive association between vertical equity and tax compliance. Saad (2009) found no positive association. Although Saad's (2009) results were different, her study was Malaysian while the other studies were set in Sweden, the United States and Australia, which suggests

that there may be cross-national differences that impact the association between vertical equity and compliance. Exchange equity is positively associated with tax compliance in Vogel (1974), Spicer and Lundstedt (1976), Scott and Grasmick (1981), Warneryd and Walerud (1982), Wallschutzky (1984), Porcano (1988), Alm *et al*. (1992), Maroney *et al*. (2002), Kim (2002), King and Sheffrin (2002), Wenzel (2002b), and Richardson (2006b). There was no significant positive association between exchange equity and tax compliance in Mason and Calvin (1978), Keenan and Dean (1980), and Saad (2009). Again the results could be affected by national differences. The existing literature, which has been examined in various countries other than Kenya, demonstrates that procedural fairness is positively associated with tax compliance in Porcano (1988), Worsham (1996), Wenzel (2002b), Murphy (2004a), and Murphy (2004b). Thus from the above literature one can hypothesize that tax fairness (as measured by the four constructs are positively correlated with tax compliance.

Corporate characteristics and compliance behavior

The few studies which have been conducted on corporate tax payers have concluded that non-human factors applicable to corporate taxpayers need to be considered. Factors such as business profile-sector, legal structure of firm, age, size, industry and economic elements (OECD, 2004, p. 40) may have an influence on corporate compliance. The first empirical study on corporate tax compliance was conducted by Rice (1992), who examined data of small corporations (with assets of between US$1 and US$10 million). He reported that compliance is positively related to being a publicly traded company, in a highly regulated industry, where such characteristics which assure public disclosure of information tend to encourage better tax compliance. Rice (1992) also showed that firm size and tax compliance are not positively related but that the higher the amount of a firm's turnover, the greater the reporting gap. Hanlon, Mills and Slemrod (2007) conducted some exploratory analysis using data sets of audit and appeal records, matched with the tax returns and financial statements of several thousand corporations in the US. Among other variables, the size of a company was found to be positively correlated with non-compliance. However, combined with other information, corporate tax non-compliance is U shaped, suggesting that medium-sized companies have the lowest rate of noncompliance. Blackwell (2000) examined data sets from New Mexico's Department of Taxation and Revenue and that found firms that are larger, older and have less complicated tax situations are more compliant than firms that are smaller, younger and have more complicated tax situations. This study will examine three demographic factors which include: size (turnover), tax liability and length of time the company has been in business (age). As such, we seek to test the hypotheses that there is a positive relationship between business size (and age) and compliance of corporate taxpayers, and that there is a negative relationship between business tax liability and compliance of corporate taxpayers.

Population and sampling method

The population for this study will include two categories of tax payers; large sized tax payers and medium sized tax payers as classified by the Kenya Revenue Authority (KRA). Large companies are defined by KRA as tax payers with an annual turnover of Kshs.750million and above. As of 1st May 2016, 1,315 companies were registered as large tax payers. Medium sized companies (MTOs) as defined by KRA as those companies with an annual turnover of between Ksh.300 million and Kshs.750 million per annum. In this study a stratified sample of 100 companies is used. The choice of 100 firms is motivated by the choice of the modelling and analysis strategy that the study intends to use, i.e. the structural equations modelling that performs best with at least 100 cross sections (Farrington, 2009). In this regard, and based on the proportions of the firms in the total population, the study obtained responses from 50 large-sized firms and 50 medium-sized firms. A semi structured questionnaire is then used to collect data. The validity and reliability of the questionnaire was established using the Cronbach coefficient (alpha). A Cronbach coefficient alpha (CA) of 0.70 or above is considered good reliable while one of 0.80 is considered even better. Likewise, when Cronbach coefficient alpha is between 0.60 and 0.70, it is only acceptable if other indicators are good.

Data Analysis

Upon data collection, the quantitative data is analysed using Structural Equation Model (SEM) program which has been cited in literature as appropriate for testing relationships among multiple independent and dependent constructs (Gefen, Straub, & Boudreau, 2000). Structural equation model (SEM) is a multivariate approach that allows researchers to concurrently examine both measurement and structural components of a model by testing the relationships among multiple independent and dependent constructs. This technique encompasses confirmatory factor analysis, path analysis and multiple regression components thus making it the dominant multivariate technique in modern research (Cooper and Schindler, 2008). The variables in SEM are measured (observed / manifest) variables or indicators and factors (latent variables/ constructs). The basic idea is that a latent variable or factor is an underlying cause of multiple observed behaviours. Factors are weighted linear combinations that are created by the researcher and represent underlying constructs that have been discovered. Variables and factors in SEM may be classified as either "independent" or "dependent" variables; a classification that is commonly based on a theoretical causal model that may be formal or informal.

This model generally assumes multivariate normality and linearity of relationships between variables. It is divided into two parts which represent stages in the analysis; the measurement model and the structural model (that relates latent variables to one another). The SEM model is usually presented in a diagram where the names of measured variables are within rectangles and the names of factors/ latent variables in ellipses. Rectangles and ellipses are connected with lines having an arrowhead on one (unidirectional causation) or two (no specification of direction of causality) ends. Fig 1 illustrates the relationship between a measurement model and the structural model in SEM framework adopted from Chin (2009). The latent variable $\xi 1$ is the unobserved variable implied by the covariance among the measured block of indicators X_{11}, X_{21} and X_{31}. Similarly, the latent variables $\xi 2$ and $\xi 3$ are measured by their associated observed measures; X_{12}& X_{22} and X_{13}, X_{23}, X_{33}, X_{43}& X_{53}, respectively. The arrows between the latent variables show the path coefficients measuring the relations between the constructs. For this study, there are 4 latent variables that capture the dimensions of tax

fairness and 4 others that measure the perspectives of tax compliance (filing of returns, tax payments, likelihood of understating incomes and tax over-payments).

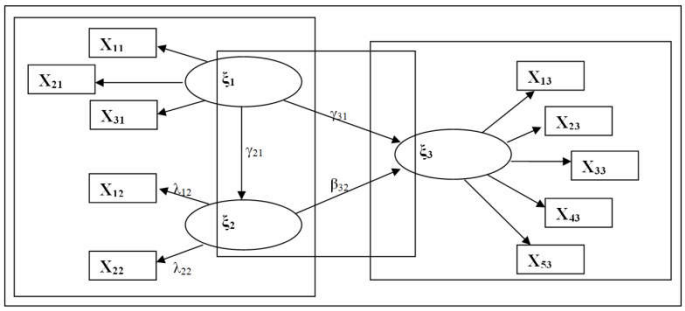

Fig. 1. Measurement and Structural Models in a SEM (Adopted from Chin, 2009)

SEM can be estimated in two main distinct ways: via a covariance-based SEM (or CBSEM) and Partial Least Squares (PLS). This study uses PLS because of its relevance and numerous advantages over CBSEM including: focus on the prediction of the dependent variables (both latent and observed) through maximization of the explained variance (R-squared) of the dependent variables (thus more suited for predictive applications and theory building or exploratory analysis; makes no measurement, distributional or sample size assumptions; ability to ensure that misspecification in one part of the model will have less influence on the parameter estimates in other parts of the model; avoids problems associated with inadmissible solutions and factor indeterminacy; allows working with both formative and reflective indicators; can handle very complex models with a large number constructs, indicators and relationships; and can work with smaller sample sizes. However, PLS only works with recursive (unidirectional) relationships (Baroso *et al*., 2010)[1]. Since the objective of this study is to predict tax compliance behaviour, the PLS approach that is prediction-oriented is preferred since it offers better prediction capability alongside the other benefits listed above. This, coupled with the fact that this approach has rarely been used for tax compliance studies, grants an opportunity to extend literature.

4Measurement Model Evaluation

The objective of assessing this model is to test its validity and reliability by examining two main elements of factorial validity: discriminate and convergent validity (Gerbing and Anderson, 1988).Validity tests that illustrate how well the measurement items relate to the constructs are performed to ensure that measures perform adequately. When factorial validity is satisfied, it implies that each measurement item correlates strongly with the construct it is related to, while correlating weakly or not significantly with all other constructs. There are several criteria for validating reflective constructs in literature which include indicator reliability, construct reliability, convergent validity and Discriminant validity (Chin, 1998b; Gefen and Straub, 2005; Barosso *et al*., 2010; and Gotz *et al*., 2010). In this study, we use the individual indicators reliability and convergent reliability measures. Indicator reliability is evaluated by examining the loadings (correlations) of the indicators with their respective corresponding latent variables. A commonly accepted threshold is to accept items with loadings of 0.707 or more, which implies that there is more shared variance between the constructs and its measures than error variance (Hulland 1999; Barroso *et al*., 2010 and Gotz *et al*., 2010). Chin (1998b), however, cautions against eliminating measures with low loadings in cases where the measures are important to the construct. It is advisable that the only time to remove measures with low loadings is if these measures are influenced by additional factors, such as a method effect or some other concept to the extent it helps minimise residual variance, as long as other more reliable indicators exist (Chin, 2010). Unlike in CBSEM where inclusion of additional poor indicators will lead to a poor fit, this in PLS helps to extract the useful available information in the indicators to create a better construct score (Barroso *et al*., 2010) as long as other more reliable indicators still exist (Chin, 2010). Convergent validity for reflective measures is commonly measured using the Average Variance Extracted (AVE) (see for instance; Fornell and Larcker, 1981; and Gotz *et al*., 2010). AVE attempts to measure the amount of variance that a latent variable captures from its indicators, relative to the amount due to measurement error (Chin, 1998b). It is arguably a more conservative ration than composite reliability measure and is only applicable to constructs with reflective indicators. It is computed as follows:

$$AVE = \frac{(\sum \lambda_i)^2 \operatorname{var} F}{(\sum \lambda_i^2) \operatorname{var} F + \sum \Theta_{ii}}$$

where λ_i, F and Θ_{ii} are as defined before. Similarly, if F is set at 1, then Θ_{ii} is 1-square of λ_i. AVE values should be greater than 0.50, indicating that 50 percent or more of the indicator variance should be accounted for (Bagozzi and Yi, 1988; Chin, 1998b; Chin and Dibben, 2010; and Barroso *et al*., 2010).

Structural Model Evaluation

As earlier indicated, the structural model specifies the relationships among the latent constructs. SEM analysis does not prove causation, but tests the strength of the association between the various dimensions e.g. fairness, equity etc., and compliance. The main aim of evaluating the structural model is to test for the model's predictive power and the stability of the estimates. Given that PLS models cannot be evaluated using the traditional parametric-based techniques, non-parametric prediction-oriented measures will be considered. This includes application of R-squared (R-squared) measures to predict the power of endogenous constructs and examining the effect size f^2 to check whether predictor variables have significant influence on the predicted / dependent variable. Besides using the R-squared, path coefficients will also be used to analyse the predictive power of the model. The path coefficients values are interpreted in a similar manner to standardized regression coefficients (Fornell and Cha, 1994; and Gefen *et al*., 2000). The coefficients indicate the strength of the relationships between dependent and independent variables in the model[2].

[1]CBSEM in contrast focus is only on the parameters of the model, rests on a specific assumption of multivariate normality and independence of observations, produces biased results in case of misspecification in one part of the model, is prone to problems associated with inadmissible solutions and factor indeterminacy, is designed to operate with reflective indicators only, runs into difficulties when there are more than 50 variables; only works best with sample size of more than 200.

[2]The stability of the coefficients can also be assessed through PLS resampling techniques such as Q-square Predictive Relevance (blindfolding), jacknifing

Overall Model Validation

Once the structural model has been evaluated, the overall model can be validated by computing the goodness of fit index. A global criterion of goodness of fit index as proposed by Tenenhaus *et al*. (2004) will be applied to measure the quality of the causal model. The GoF index takes into account the model's performance in both the measurement and the structural model, providing a single measure for the overall prediction performance of the model[3]. The model fit is determined by the square root of the product of the geometric mean of the average communality and the average R-squared, as shown below:

$$GOF = \sqrt{Average\_Communality * Average\_R-squared}$$

where the average communality is computed as a weighted average of all the communalities (weights being the number of manifest variables / indicators of every construct) and the average R-squared is the average of R-squared of all the endogenous constructs.[4]The average communality measures the quality of the measurement (outer) model and the average R-squared measures the quality of the structural (inner) model.

Data analysis and estimation results

In order to determine the reliability of the measures of tax fairness and tax compliancewe calculated the Cronbach alphas for each fairness dimension and for compliance. For behavioural research, a minimum acceptable Cronbach alpha is 0.6 (Kerlinger and Lee, 2000). We maximized the Cronbach alphas by deleting several indicators where appropriate. Results are tabulated in Table 1 All measures, except those of procedural fairness have Cronbach alphas of at least 0.6; the recommended minimum for reliable measures.

Table 1. Cronbach Alphas for Final Measures of Reliability of Constructs (Cronbach alphas)

Construct/Dimension	Indicators	Cronbach alpha	Verdict
Exchange Fairness	Fairness_2& 3	0.6150	Constructs are Mediocre/average measures of tax fairness
Procedural Fairness	Fairness_4,5,6,7,8,9,10,11,&14	0.7973	Constructs are reliable measures of fairness
Horizontal fairness	Fairness_15,16 &17	0.3231	Constructs are not reliable measures of fairness
Compliance	Compliance (filing returns, tax payment, & likelihood of understating income)	0.5923	Mediocre measures of compliance

Table 2. Measures of Sampling Adequacy of Analysis

	Kaiser-Meyer_Olkin (KMO)	Bartlett's test of Spherity	Verdict
Exchange Fairness	0.5000	$\chi2$ (1) = 21.48 p-value = 0.0001	Not ok to proceed with factor analysis (KMO value too low)
Procedural Fairness	0.7168	$\chi2$ (36) = 309.528 p-value = 0.0001	Proceed with factor analysis
Compliance	0.5832	$\chi2$ (3) = 32.43 p-value = 0.0001	Proceed with factor analysis

Based on the analyses of Cronbach alphas, we proceed to measure the sampling adequacy of the analysis using the Kaiser-Meyer-Olkin measure for the exchange and procedural fairness constructs. KMO takes values between 0 and 1, with small values meaning that overall the variables have too little in common to warrant a factor analysis[5]. But, this test requires that we first conduct principal component analysis on the measures with orthogonal rotation (varimax).

The Kaiser-Meyer-Olkin measure for procedural fairness verified the sampling adequacy for the analysis, with a KMO measure of 0.7168, which is 'good' according to Field (2009). In addition, we conduct a Bartlett's test of sphericity which compares the correlation matrix with a matrix of zero correlations (technically called the identity matrix, which consists of all zeros except the 1's along the diagonal). From this test we are looking for a small p-value indicating that it is highly unlikely for us to have obtained the observed correlation matrix from a population with zero correlation. Here, we find $\chi2$ (36) = 309.528, p-value=0.0001, which indicates that correlations between items were sufficiently large for principal components analysis. The KMO measure for exchange fairness point to sampling inadequacy for analysis of exchange fairness. We therefore proceed to conduct a valid factor analyses for procedural fairness and compliance. Table A.1 in the appendix displays the factor loadings after rotation. A total of 13 factors were extracted, corresponding to the 9 tax fairness factors for procedural fairness and 4 compliance factors. All factor scores, except for one of the compliance measures that capture over compliance (tax over-payment), exceeded 0.2 which is the recommended level for sample sizes below 600 (Stevens, 2002). Thus, the principal component analysis provides preliminary evidence that the measures load on the appropriate dimensions. We then proceed to conduct SEM analyses. For the nine procedural fairness indicators, all the parameter estimates were positive and statistically significant at 5% level, standard errors were all low. There were no negative error variances. Byrne (2009) recommends an examination of the standardized residuals covariances which should not exceed 2.58 for a good fit of the model; indicating lack of discrepancies. There was only 1 covariance that slightly exceeded the limit at 2.77. In addition, modification indices of the model should be relatively small. The study found relatively small modification indices-thus the measurement model appears to be a good fit. However, this result was arrived at after dropping afew indicators (fairness measure 8 and fairness measure 11). For robustness sake, we

and bootstrapping.

[3] There are no widely accepted thresholds to judge the significance of the index, however, recent studies (for example, Tenenhaus *et al*., 2005; and Duarte & Raposo, 2010), argue that an index measuring 0.3 seems adequate.

[4]This computation of the average communality should only be used for constructs with multiple indicators. Single indicator constructs should not be used for the computation of the average communality, because they yield averages of 1(Tenenhaus *et al*., 2005).

[5] Historically, the following labels are given to values of KMO (Kaiser, 1974): 0.00 to 0.49: *unacceptable*; 0.50 to 0.59: *miserable*; 0.60 to 0.69: *mediocre*; 0.70 to 0.79: *middling*; 0.80 to 0.89: *meritorious*: 0.90 to 1.00: *marvelous.*

analysed the goodness-of-fit statistics for retained indicators. We find $\chi 2 = 72.3$ with 15 degrees of freedom, $p<0.000$. This statistic is not sensitive to large sample sizes, so additional goodness-of-fit measures should be examined (Byrne 2009; Hooper *et al*. 2008). The root mean square error of approximation (RMSEA) was 0.034, the Goodness-of-Fit Index (GFI) was 0.888 and the Comparative Fit Index (CFI) was 0.982. All meet the generally accepted minimum standards (RMSEA should not exceed 0.06, and each of the GFIand CFI should be greater than 0.9), indicating that the measurement model for fairness dimensions is a good fit (Byrne 2009). This SEM analysis indicates that the procedural tax fairness is appropriately modelled using the six retained unique indicators.

the goodness-of-fit statistics are all high and convergent validity is established (Correlations are shown in Tables A.2-A.4). Similarly, we subjected the indicators of compliance through the same procedureas above to establish the goodness of fit of the measurement model for compliance. Parameter estimates were all positive and all the pair wise correlations coefficients were found to be significant at 5% level of significance; and all the standard errors generated from SEM analysis were not excessively large or small, as prescribed for a good fit model. In addition, all error variances were positive. The standardized residuals and the modifications that allow us to check model specification were also examined. Results indicate that the standardized residual covariances were all

Table 3. SEM Regression Results of Tax Compliance on Procedural Fairness Measures

	Compliance (Returns)[1]	Compliance (Tax Payment)[1]	Compliance (Likelihood of understating income)[1]
Independent variables	Coef.	Coef.	Coef.
(Measures of procedural fairness):	(std errors)	(std errors)	(std errors)
fairness_4	0.0102	0.0403**	-0.1112
	(0.0151)	(0.0176)	(0.0843)
fairness_5	0.0245*	-0.0151	0.1461*
	(0.145)	(0.0304)	(0.0786)
fairness_6	-0.0630***	-0.0496	-0.0900
	(0.0179)	(0.0439)	(0.0972)
fairness_7	0.0488***	0.0204	-0.1502
	(0.0170)	(0.0408)	(0.0951)
fairness_8	-0.0163	0.0498**	-0.0451
	(0.0147)	(0.0209)	(0.0820)
fairness_10	0.0181*	-0.0438*	0.0872
	(0.0102)	(0.0242)	(0.0677)
Firm Age	-0.0027*	-0.0002	0.0327***
	(0.0015)	(0.0015)	(0.0082)
Total Turnover (Firm size)	-0.0612***	0.2065***	0.0496
	(0.0222)	(0.0404)	(0.1241)
Income Tax Liability	0.0311***	-0.0172	-0.0336
	(0.0120)	(0.0149)	(0.0837)
Constant	1.2133***	4.1537***	5.3208***
	(0.1009)	(0.2410)	(0.5925)

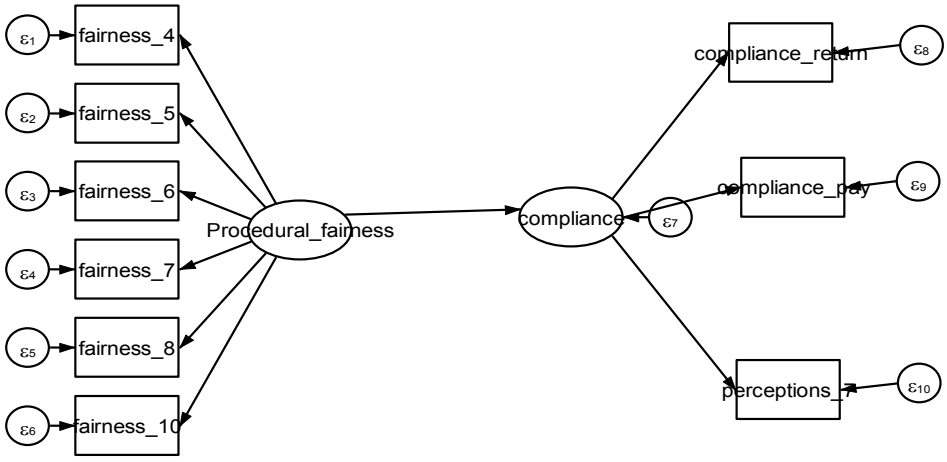

Figure 2. Structural model

We also tested for convergent validity by examining the correlations among indicators (Byrne 2009). Convergent validity is confirmed present if there is statistically significant correlation among the indicators, i.e. each set of indicators within each construct strongly correlate. All these correlations were statistically significant at the 0.05 level, except for the correlation between fairness measure 8 and fairness measure 10. Therefore, convergent validity is established for each construct. In this regard, the measurement model for the tax procedural tax fairness construct appears to be robust because

below the stipulated maximum limit of 2.58 and the modification indices were all below 1. This indicates a good fit for the compliance measurement model. We proceeded to analyse the goodness of fit for robustness purposes and found the chi-square measure of discrepancy was $\chi 2 = 0.000$ with 3 degrees of freedom and p-value of 0.000. In recognition of the concerns raised in literature that this statistics is not sensitive to large sample sizes, we also considered other additional goodness-of-fit measures (Byrne 2009; Hooper *et al*., 2008) such as the RMSEA and the GFI as well as the CFI. These

measures were estimated at 0.000, 0.792 and 1.000, which are above the prescribed minimum of 0.9 (Byrne, 2009). Convergent validity was also confirmed through an analysis on the correlations among compliance indicators following the earlier adopted approach of Byrne (2009). We find statistically significant correlations between all pairs of indicators at 5% level of significance. As such we conclude that the compliance measurement model displays a good fit. [6]

Structural Model

Once we determined that the measurement models for procedural tax fairness and compliance display good fits, we proceeded to test the validity of a possible causal structure by building and analysing a structural model. The structural model specifies the relationships among the latent constructs of procedural fairness and compliance. The SEM analysis does not prove causation, but will test the strength of the association between procedural tax fairness measures and tax compliance. Our structural model has one dependent factor, i.e. tax compliance and six independent factors; the indicators of procedural fairness. The structural model is depicted in Figure 2 in the Appendix. Table 3 shows the regression coefficients along with statistical significance of the regression paths for each procedural tax fairness measures in influencing tax compliance. The results are generated by structural equation modelling regression. We conduct regression analysis of the three measures of tax compliance on the varied measures of procedural fairness, while controlling for the age of the firm, total turnover and income tax liability. Age captures the number of years that the firm has been in existence since its inception. The influence of Age on compliance behaviour can take on any sign. Total turnover of that captures the size of the firm is included in the analysis to isolate the influence of firm size on tax compliance behaviour. As a firm turnover increases, it is expected that the firm develops a dedicated unit to handle tax matters and as such, noncompliance-from whatever perspective, is minimized. Income tax liability is expected to be negatively associated with compliance to tax payments since firms seek to minimize the amount of taxes they pay in an effort to increase after-tax profits. We consider six measures of procedural tax fairness and their respective influence on tax compliance[7]. In terms of compliance measure based on meeting tax return requirements, the tax fairness measures that significantly influence tax compliance behaviour among corporate taxpayers in Kenya include measures 5,6,7 and 10. Out of these measures, it is only fairness measure number 6 which states that the tax office's decisions are mainly based on facts and not opinions that negatively influence on tax compliance. This means that when firms perceive that the rules and approaches applied by the tax office treat them equally, there is a tendency for them to relax on submitting tax returns. This reflects perhaps existence of some moral hazard issue in that firms may think since all taxpayers are treated equally; even those that do not fully comply would still not be subjected to harsh penalties. It must be noted that the responses on compliance measure on returns were all spread between fully complying and partially complying and no response on zero-compliance. This result is also present when firms perceive that in a dispute the tax office would evaluate their information objectively and fairly and when tax office considers firm circumstances when taking decisions. This may imply when the tax office yields too much ground in seeking full compliance on returns and allow firms to make explanations on why they don't fully submit returns, there is a tendency for firms to fail to fully submit returns. However, as firms perceive that the tax office's decisions are mainly based on facts and not opinions, they seem to increase their compliance with the requirements to file returns. This is directly related to adherence to laid-down procedures and tax office tendency to allow explanations on failure to file returns. As such, firms would be obligated to make full submissions on time.

When we account for the age of the firm, as age increases, firms tend to have more dedicated units that handle tax matters and as such would enhance their compliance. This explains the negative relationship between firm age and tax compliance as measured by extent of filing tax returns. The same explanation would also apply for the case of increasing firm size which relates negatively (implying increased size increases firm's tendency to fully comply) with tax compliance. But as income tax liability increases firms would have a tendency to reduce their likelihood to fully file tax returns. This is consistent to expectations from theory since tax payment is a cost to the firm and all firms seek to minimize costs. In terms of the impact of tax fairness on tax compliance- as measured by the number of times tax payments were made on 2016, tax fairness measures 4,8 and 10 were found to be significant. Based on tax measure 4, which captures the notion that as firms perceive the tax office's decisions to be fair, they are likely to increase their compliance to tax payments. This is also the case when firms perceive that it is fair when there is a dispute the resolution mechanisms in place are fair. However, when firms perceive that the tax office considers circumstances of each office in its decisions- there is a tendency for them to reduce tax compliance. This is perhaps because firms can easily invest in reducing tax burden by exploring tax avoidance schemes when they know their tax office is flexible to consider their circumstances.

As for the control variables, firm age and firm income tax liability are not significant determinants of compliance. However, firm total turnover is significant. As firmturnover increases, there is a tendency for the firm to fully comply with tax payments. This is because as the firm size (measured by turnover) increases its contribution to total tax revenue is significant and the revenue authority would be keener in the tax payments that the firm remits. As such, noncompliance is easily detected and where variations may occur, the tax office would be keen to scrutinize. We also sought to establish the influence of the procedural tax fairness measures on the likelihood of a firm understating its income when under financial stress. Among all the tax fairness measures, we found that only tax fairness measure number 5 (which captures perceptions of firms on whether the rules and approaches applied by tax office treat all taxpayers equally). We indicate that as firms perceive this statement to be true, there is a tendency for them to increase their likelihood of understating income. This is perhaps because of the likelihood that when all firms are treated equally, some can afford to understate their

[6] Full results from STATA output on correlations, covariances matrices are available upon request (are excluded from this paper due to space)

[7] ***Fairness_4*** *suggests that the tax office's decisions are usually fair;* ***Fairness_5*** *states that rules and approaches applied by tax office treat all taxpayers equally;* ***Fairness_6*** *states that the tax office's decisions are mainly based on facts not opinions;* ***Fairness_7*** *states that in a dispute the tax office would evaluate the firm's information objectively and fairly;* ***Fairness_8*** *states that the dispute resolution mechanism in place is fair; and* ***Fairness_10*** *states that tax office considers circumstances of each tax office in its decisions . The response spans 1 to 7 where* ***1= strongly disagree to 7= strongly agree****.*

incomes without facing a real risk of penalties should they be discovered. In other words, when all firms are treated equally, moral hazard sets in and thus leading firms to attempt understating of income to minimize tax liability.

Conclusions and Recommendations

The objectives of this study were to examine the influence of tax fairness on tax compliance behaviour in Kenya and also ascertain the effect of firm demographic characteristics on tax compliance. When compliance is measured by filing of tax returns, this type of compliance is worsened when firms perceive that the rules and approaches applied by the tax office in its decision making treat them equally. There would be laxity on the part of firms to meet return requirements when they feel the tax office treats all of them equally. While this concept may have been interpreted to mean, whether one firm submits returns or not, they are treated the same- the implication therefore was to cause some moral hazard on the part of firms to consider not submitting returns as an easier (and not expensive) option. A similar outcome is achieved when firms perceive that, in a dispute, the tax office would evaluate their information objectively and fairly and when tax office considers firm circumstances when taking decisions. This may imply that when the tax office yields too much ground in seeking full compliance on returns and allow firms to make explanations on why they don't fully submit returns, there is a tendency for firms to fail to fully submit returns. However, when firms perceive that tax office's decisions are based on facts and not opinions that we see them improving their compliance behaviour. This is directly related to adherence to laid-down procedures and tax office tendency to allow explanations on failure to file returns. As such, firms would be obligated to make full submissions on time. In terms of the control variables, when we account for the age of the firm, as age increases, firms tend to have more dedicated units that handle tax matters and as such would enhance their compliance. This explains the negative relationship between firm age and tax compliance as measured by extent of filing tax returns. The same explanation would also apply for the case of increasing firm size which relates negatively (implying increased size increases firm's tendency to fully comply) with tax compliance. But as income tax liability increases firms would have a tendency to reduce their likelihood to fully file tax returns. This is consistent to expectations from theory since tax payment is a cost to the firm and all firms seek to minimize costs.

In terms of the impact of tax fairness on tax payment compliance, the tax measures that were found to significantly influence compliance include a measure of the perceptions that tax office's decisions are fair. When firms feel that the tax office's decisions are fair, they are likely to increase their compliance to tax payments. This is also the case when firms perceive that the in circumstances when there is a dispute, the resolution mechanism in place is fair. However, when firms perceive that the tax office considers circumstances of each office in its decisions- there is a tendency for them to reduce tax compliance. This is perhaps because firms can easily invest in reducing tax burden by exploring tax avoidance schemes when they know they tax office is flexible to consider their circumstances. As for the control variables, firm age and firm income tax liability are not significant determinants of compliance. However, firm total turnover is significant. As firm turnover increases, there is a tendency for the firm to fully comply with tax payments. This is because as the firm size (measured by turnover) increases its contribution to total tax revenue is significant and the revenue authority would be more alert to the tax payments that such firms remit. As such, non compliance is easily detected and where variations may occur, the tax office would be keen to scrutinize. We also sought to establish the influence of the procedural tax fairness measures on the likelihood of a firm understating its income when under financial stress. Out of all the six tax fairness measures, we found that only tax fairness measure number 5 (which captures perceptions of firms on whether the rules and approaches applied by tax office treat all taxpayers equally) was significant in influencing tax compliance. We indicate that as firms perceive this statement to be true, there is a tendency for them to increase their likelihood of understating income. This is perhaps because of the likelihood that when all firms are treated equally, some can afford to understate their incomes without facing a real risk of penalties should they be discovered. In other words, when all firms are treated equally, moral hazard sets in and thus leading firms to attempt understating their income to minimize tax liability.

From these conclusions we can draw some policy recommendations. The tax authority could consider reviewing the tax system to ensure that the aspects of tax fairness that discourage compliance are addressed. For instance, the findings show that if the tax office rules and approaches applied in decision making treat taxpayers equally- they are likely to reduce tax compliance in terms of returns submitted as well as understatement of their income because of the potential moral hazard that such could cause. As such, there should be a differentiated approach to deal with firms so that moral hazard is minimized when firms know that if they fail to comply, they face the law. In addition, if there is extremely highlevel of objectivity and fairness in evaluation of individual firm circumstances, this may also encourage noncompliance especially on submission of returns and tax payments. A deviation from rules to adopt an objective understanding of individual firm circumstances can encourage noncompliance since firms can invest in providing explanations for noncompliance. As such, an optimal balance between adherences to tax rules can work to encourage compliance since firms would not be tempted to understate income and /or fail to submit returns in anticipation of an occasion to explain their individual circumstances.

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Appendix: Table A.1: Principal Component Analyses for procedural Fairness

Procedural Fairness measures		Rotated Factor Loadings
fairness_4	The tax office's decisions are usually fair.	0.5784
fairness_5	The rules and approaches applied by the tax office treat all taxpayers equally.	0.5977
fairness_6	The tax office's decisions are mainly based on facts and not on opinions.	0.7685
fairness_7	In a dispute, the tax office would evaluate my information objectively and fairly.	0.753
fairness_8	The dispute resolution mechanisms put in place by the tax office are fair	0.6124
fairness_9	The decisions of the income tax local committee are generally fair and unbiased.	0.5567
fairness_10	The tax office takes the circumstances of each company when making decisions.	0.4973
fairness_11	The tax office corresponds with taxpayers in a timely manner.	0.3865
fairness_14	The tax office consults widely about how they might change things to make it easier for taxpayers to meet their obligations	0.3411
Compliance (return)	To what extent did your organization meet income tax returns requirements in 2014	0.6238
Compliance (tax payment)	In 2014, how many times did your organization make tax payments on time	0.5227
Compliance (likelihood of understating income)	If my organization encounters any financial pressure it would be easy for the company to justify under-reporting its income	0.4452
Compliance (Frequency of tax overpayment)	How often has your organization over paid income tax in the last3 years	0.0698

Table A.2: Correlation Matrix for measures of Exchange Fairness

	Fairness_1	Fairness_2	Fairness_3
Fairness_1	1.0000		
Fairness_2	0.0684	1.0000	
Fairness_3	0.1008	0.4441	1.0000

Table A.3: Correlation Matrix of Procedural fairness

	fairness_4	**fairness_5**	**fairness_6**	**fairness_7**	**fairness_8**	**fairness_9**	**fairness_10**	**fairness_11**	**fairness_12**	**fairness_13**	**fairness_14**
fairness_4	1.000										
fairness_5	0.433	1.000									
fairness_6	0.512	0.492	1.000								
fairness_7	0.490	0.427	0.715	1.000							
fairness_8	0.232	0.359	0.331	0.437	1.000						
fairness_9	0.218	0.314	0.235	0.270	0.718	1.000					
fairness_10	0.278	0.246	0.371	0.330	0.142	0.301	1.000				
fairness_11	0.167	0.112	0.290	0.331	0.092	0.070	0.480	1.000			
fairness_12	-0.070	-0.254	-0.140	-0.157	-0.061	-0.087	0.018	-0.027	1.000		
fairness_13	0.080	-0.015	-0.018	-0.104	-0.013	-0.082	-0.158	-0.090	0.361	1.000	
fairness_14	0.154	0.231	0.352	0.168	0.076	0.069	0.210	0.306	-0.094	-0.044	1.000

Table A.4: Correlation matrix of Measures of Horizontal fairness (Fairness_15, Fairness_16 & Fairness_17)

	Fairness_15	Fairness_16	Fairness_17
Fairness_15	1.0000		
Fairness_16	0.4226	1.0000	
Fairness_17	0.0169	0.0359	1.0000

****