Tax compliance in a developing country

Understanding taxpayers' compliance decision by their perceptions

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Abstract

Purpose – The purpose of this paper is to establish the relationship between perceived grounds for tax non-compliance or compliance behaviors and perceived tax compliance factors.

Design/methodology/approach – The study employed a correlational and cross-sectional survey design seeking to understand tax compliance by taxpayers' perceptions in Uganda. Data from 205 respondents to the questionnaire were analyzed using Statistical Package for Social Scientists and structural equation modeling with analysis of moment structures.

Findings – Governmental effectiveness, transparent tax system (TTS) and voice and accountability (VA) are perceived grounds for tax compliance or non-tax compliance and, as indicators of tax administration significantly influence variances in tax compliance. Tax compliance in Uganda is indicated by perceived worth and distribution of public expenditure (WDPE), level of taxation, inequalities in the tax system and tax evasion.

Research limitations/implications – No distinction is made between actual and potential taxpayers. Still, the results can contribute to our understanding of tax compliance puzzle from the behavioral angle. Factors such as perceived WDPE indicate a taxpayer's compliance decision and factors such as governmental effectiveness explain that decision. Additional government policy requirements beyond greater enforcement actions by the tax authorities should be cultivated.

Originality/value – Results contribute to extending the basic tax effort model by establishing the extent to which VA, TTS and governmental effectiveness (GEF) matter in a developing country context. The study presents tax compliance as a taxpayer's decision that is informed by perceptions and shows that factors increasing the taxpayers' perceptions about VA and GEF relate to the importance that their perceptions have in their tax compliance decisions.

Keywords Effectiveness, Voice, Developing country, Tax compliance, Tax administration

Paper type Research paper

1. Introduction and motivation

Tax revenue plays an important role in sustaining economic development and the financing of both social programmes and infrastructure investment (Ibrahim *et al.*, 2015). Tax revenue has also been found to be important in the fiscal illusion debates pioneered by Puviani (1903). The theory of Fiscal illusion suggests that when government revenues are not completely transparent or are not fully perceived by taxpayers, then the cost of government is seen to be less expensive than it actually is. Puviani's (1903) original idea was that the aim of the ruling group is to design the taxation system so that the resistance of the dominated class is minimized. This means that tax revenue also sustains governments and may be

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more critical in less democratic societies. As a result, the rulers seek for answers to the question, "In order to minimize taxpayer resistance for any given level of revenues collected, how should the fiscal system be organized?" (Reis Mourão, 2008, p. 51). Such a question heralds the importance attached to tax administration in the tax compliance equation. Researchers such as Armah-Attoh and Awal (2013) have indicated that the capacity of a country to provide for the welfare and security to its citizens, in addition to developing and consolidating a representative democracy is determined by its ability to raise enough resources through tax. Such voices suggest that effective mobilization of tax revenues from all economic agents increases public services and facilitates the achievement of the Millennium Development Goals in developing countries (Cerqueti and Coppier, 2009; Gohou and Soumaré, 2012). The need for tax compliance is now even more elevated as Ritsatos (2014) indicates that the importance of tax compliance has increased dramatically with sovereign debt crisis in the global economic environment. This means that all revenue authorities (or governments) world over should strive to achieve a good tax compliance outcome as possible, that is, to maximize the overall level of compliance with the tax laws (Organisation for Economic Co-operation and Development (OECD), 2004).

But, taxpayers' behaviors and perceptions complicate the achievement of a good compliance outcome (OECD, 2004). In Uganda, for example, the achievement of a good compliance outcome has been elusive with consistent strikes by traders and other taxpayers whenever there are proposals to improve tax revenue. Moreover, Mugabe and Kulabako's (2016) quote Uganda Revenue Authority (URA) tax register as having only 882,000 taxpayers out of a working population of more than nine million and also report that only 11.7 percent is a contribution of tax to gross domestic product which is lower than Kenya's 19.3 percent in East Africa. The Ugandan media also consistently reports instances of smuggling, undervaluation and miss-description of imported goods, which actions are a negative element in realizing government tax revenue targets. According to Sanya and Mulondo (2015), URA wishes to toughen on traders involved in tax crimes such as smuggling, undervaluation and miss-description. One of the measures URA has instituted is arrest of tax offenders, penalties for undervalue declaration and miss-declaration (Sanya and Mulondo, 2015). The stance from URA suggests that there are widespread non-tax compliance behaviors among taxpayers in Uganda. Yet, quoting a URA commissioner, Sanya and Mulondo (2015) report that tax revenue in Uganda is used, among others, to build roads, schools and hospitals. This quote suggests that the commissioner is "painting" taxes as less of a burden than they really are (Reis Mourão, 2008). Elsewhere, a study by Sikka and Willmott (2013) on the examination of the involvement of global accountancy firms in devising and selling tax avoidance schemes euphemistically marketed as tax planning suggests taxpayers' readiness to devising schemes that reduce the tax take on business and thereby reducing the revenues required to provide and maintain public services.

It is not clear why, in spite of the importance of tax revenue and greater enforcement mechanisms, non-tax compliance continues to exist. Available literature indicates that economic and non-economic explanations of compliance behaviors have a predictive force. The pioneering work of Allingham and Sandmo (1972) gave birth to the development of a series of models by several researchers to explain the behavior of the rational taxpayer under conditions of uncertainty (see Ritsatos, 2014 for a thorough review). But, Alm *et al.* (1992) identified and showed the limitations of these neoclassical paradigms. This has tended to suggest that the question of "why do people pay taxes when they have an opportunity even an incentive to evade?" (Alm *et al.*, 1992, p. 21) remains unanswered, providing incentives to explore alternative explanations (Ritsatos, 2014). Also OECD (2004) revealed that individual taxpayers adopt a range of motivational postures in their response to the demands of authorities and acknowledges that it is not "easy to answer the question of what influences taxpayer behaviour either towards compliance or non-compliance" (p. 41).

The purpose of this paper is to contribute to the answer to this question by establishing the relationship between perceived grounds for tax non-compliance or compliance behaviors and perceived tax compliance factors. In this paper, we are presenting tax compliance as a taxpayer's decision that is informed by perceptions. In line with the theory of fiscal illusion (Puviani, 1903; Buchanan, 1967), this paper shows that if the governments rely on full exploitation of fiscal illusion, they will be unable to mobilize large amount of tax resources without the need for a broad social contract that could lead to more redistribution, effective public services and growth-enhancing policies. We suggest that factors increasing the taxpayers' perceptions about, e.g., voice and accountability (VA) and governmental effectiveness (GEF) relate to the importance that their perceptions have in their tax compliance decisions. Indeed, Frey and Torgler's (2007) view of taxation as a social act informed their study in European countries that found evidence that the VA and GEF, among others strongly influenced tax morale. The results of this paper therefore attempt to answer the following questions:

RQ1. What perceived tax compliance factors are relevant for a developing country like Uganda?

RQ2. What perceived grounds for tax non-compliance or compliance behaviors are relevant for a developing country like Uganda?

RQ3. What is the relationship between the identified perceived grounds for tax non-compliance or compliance behaviors and the identified perceived tax compliance factors?

We aim to contribute to the continued search for appropriate solutions to tax non-compliance as, in addition to other voices, Mohdali and Pope (2014) have shown that despite attempts from a wide variety of disciplines, the grounds for non-compliance or compliance behaviors of taxpayers are still inconclusive and perhaps not established in an African context. Finding factors relevant for tax administration in a developing country helps in augmenting many of the studies of compliance concerned with intentional non-compliance (James and Alley, 2004). While Ibrahim *et al.* (2015) present the pioneering micro-econometric work on the determinants of tax morale in an African country – Ghana, their study's main contribution lay in their investigation of a non-linear relationship between age and tax morale in Ghana. The current paper is presenting tax compliance as a taxpayer's decision that is informed by perceptions. Although there is significant scope for unintentional non-compliance and full compliance may require positive actions on the part of the taxpayer to discharge his or her legal duties in full (James and Alley, 2004), the results of the current study also suggest that reciprocity of positive actions on the part of the tax authorities and government could be significant in alleviating non-tax compliance among citizens. The economic approach, usually confined to penalties, may be necessary to enforce compliance by those taxpayers who would otherwise refuse to discharge their obligations as citizens. However, taxation is a means to an end and a needlessly harsh enforcement regime can detract from the whole exercise of raising money for the public benefit and may also reduce the willingness of otherwise responsible citizens to comply with what may then be perceived as an unjust system. There is a clear need to strike the right balance in encouraging voluntary compliance as well as deterring willful non-compliance. The results of this paper show that identification of relevant perceived grounds for tax non-compliance or compliance behaviors helps in striking this balance. As this study finds that VA and GEF contribute significantly to variances in tax compliance, developing countries such as Uganda may wish to extend the basic tax effort model by directing their tax administration efforts to improving VA and GEF (in terms of, e.g., exchange with government). For example, Mugabe and Kulabako (2016) have reported that economists and the business

community have cautioned Uganda Government against plans to raise taxes because it would force Ugandan taxpayers into tax evasion. Instead they (the authors) quote the executive director of Uganda Manufacturers Association as saying "the government has not made good on other issues we agreed on like high power tariffs. It defeats our understanding." Against this backdrop, our study finds that government's need to deliver on its promises is perceived to predict positive variances in tax compliance.

The rest of the paper proceeds as follows: Section 2 is literature review. It deals with relevant literature and hypotheses development. Section 3 explains the study's methodology and Section 4 presents and discusses the results. Finally, in Section 5, enlists concluding remarks.

2. Literature review

The theoretical underpinning of tax compliance is rooted in the James and Alley's (2004) presentation of a typology of approaches to tax compliance: the narrow (economic approach) and the wider approach (behavioral approach). The narrow approach is presented as an economic rationality indicated by a trade-off: expected benefits of evading, risk of detection and application of penalties. The taxpayer is assumed to maximize personal income and wealth. This view addresses the issue of efficiency in resource allocation. The taxpayer is seen as a selfish calculator of pecuniary gains and losses. With this view, tax compliance is the degree of non-compliance in terms of the difference between the actual revenue collected and the amount that would be collected if there were 100 percent compliance. Since Allingham and Sandmo's (1972) findings, the approach to the analysis of tax compliance relies on the economics-of-crime methodology arising from the seminal work of Becker (1968). Here, a rational person for tax purposes is assumed to maximize the expected utility of the tax evasion, balancing the benefits of successful evasion with the risky prospect of detection and punishment (Alm, 1999). This purely economic analysis of the evasion risk suggests that most rational individuals should either underreport income not subject to source withholding or over claim deductions not subject to independent verification because it is extremely unlikely that such cheating will be caught and penalized. This assumption has been challenged as some individuals/firms pay their taxes most of the time, and there are some individuals who apparently pay all of their taxes regardless of the financial incentives they face from the enforcement regime (Alm, 1999). Moreover, studies employing this methodology have relied on data from stable economies than from a developing country like Uganda, where the propensity to pay tax is highly crowded out (Sanya and Mulondo, 2015). Accordingly, the economic theory of a rational economic man cannot always provide a relevant theoretical framework for understanding tax compliance.

The wider (behavioral) approach is presented as a voluntary willingness to act in accordance with the spirit as well as the letter of tax law. Individual taxpayers are assumed not simply independent selfish utility maximizers, but also interact with tax authorities according to differing attitudes, beliefs, norms and roles such that the success of the tax effort depends on co-operation. This view deals with the issues of equity, fairness and incidence and the taxpayer is seen as a good citizen. The position of this paper is that tax compliance is the degree to which taxpayers comply with the letter and spirit of tax law (James and Alley, 2004). As indicated already, the narrow view of tax compliance is the degree of non-compliance measured in terms of the tax gap that represents the difference between the actual revenue collected and the amount that would be collected if there were 100 percent compliance. However, tax compliance may be seen in terms of tax avoidance and tax evasion (James and Alley, 2004; Alm, 1999). These two activities are normally distinguished in terms of legality, with avoidance referring to legal measures to reduce tax liability and evasion to illegal measures. Tax avoidance is a legal reduction in tax liabilities by practices that take full advantage of the tax laws, such as income splitting, postponement of taxes and tax arbitrage across income that faces different tax treatment. Tax evasion

consists of illegal and intentional actions taken by individuals to reduce their legally due tax obligations. Individuals and firms can evade taxes by underreporting incomes, sales or wealth; by overstating deductions, exemptions or credits; or by failing to file appropriate returns. Tax evasion is therefore a form of non-compliance. Still, if taxpayers go to excessive lengths (such as engaging in artificial transactions to avoid tax, searching out every possible legitimate deduction, using delaying tactics and appeals wherever this might reduce the flow of tax payments and so on) to reduce their liability, this could barely be considered "compliance" either. According to James and Alley (2004), taxpayers could prefer to emigrate ("tax exiles") rather than fulfill their obligations as citizens. In such cases, James and Alley (2004) conclude that even though such activities are within the letter of the law, they are evidently not within the spirit of the law. According to these authors, tax compliance is better defined in terms of complying with the spirit as well as the letter of the law. The factors that can lead to taxpayers comply with the spirit of the law in Uganda need to be established.

The extant literature suggests that many of the correlates of tax compliance are normally coined "tax administration." Tax administration may be viewed as a productive process where inputs consist of men, material and other information, and output consists of revenue for government and taxpayer equity (Bagchi *et al.*, 1995). For any tax administration to achieve its objective, it must be both effective and efficient. An effective administration system may require establishing an environment in which citizens are induced to comply with tax laws voluntarily. An environment in which citizens are induced to comply with tax laws voluntarily is one where citizens have favorable grounds for tax compliance such as those identified by Frey and Torgler (2007) as, e.g., VA and GEF. In this study, we examine whether the perceived GEF, transparent tax system (TTS) and VA (perceived extent of freedom of association and respect of human rights) can augment tax compliance. More still, opportunity has often been documented as a major explanatory factor in non-compliance (e.g. Antonides and Robben, 1995; Robben *et al.*, 1990; Webley, 2004). While the probability of detection and tax audit could counter taxpayers' opportunity for non-tax compliance, there should also be factors that should deny non-tax compliance rationalizations because Albrecht *et al.* (2010) suggest that taxpayers may also have some way of rationalizing tax non-compliance. In this sense, GEF in terms of, for example, how it responds to domestic economic problems is a negative element in rationalization of non-tax compliance. This paper also presents taxpayers' perceptions as a proxy for their predisposition to tax compliance behavior. Simmons and Cheng (1996) identify these as: perceptions of inequities in the tax system, perceptions of the level of taxation, perceptions of the worth and distribution of public expenditure (WDPE), and perceptions of the extent of tax evasion. Arising from the foregoing discourse, the following hypotheses will be stated:

H1. Perceptions of tax administration increase when level of tax education, tax audit, VA, GEF, TTS and probability of detection are present.

H2. Perceptions of tax compliance increase when there is no tax evasion, no inequalities in tax system (ITS), there is lower level of taxation and higher level of the WDPE.

The above theoretical analyses suggest tax administration through its various components is a significant predictor of tax compliance (see also Joulfaian, 2009). As established by Andreoni *et al.* (1998), income and tax rates, penalties and audit probabilities and objective and subjective measures, which all fall within the realm of tax administration, can influence tax compliance. Frey and Torgler's (2007) study in European countries also found evidence that conditional cooperation in form of VA; political stability and absence of violence; GEF; regulatory quality; rule of law; and control of corruption determine tax morale. Ibrahim *et al.* (2015) have noted a plethora of studies on the determinants of tax morale (tax compliance predisposition) with the majority relating to the developed and emerging economies with

relatively well-functioning tax administration but whose findings remain inconclusive, suggesting necessity for further research efforts. Therefore for a developing country like Uganda, the following hypothesis will be stated:

H3. There is a positive relationship between elements of tax administration and perceived tax compliance.

3. Methodology

Design, population and sample

This study employed a cross-sectional survey design because we aimed at finding out the prevalence of perceived tax administration and tax compliance, by taking a cross section of taxpayers in Uganda in October 2015. This study sought to understand tax compliance by perceptions of taxpayers in Uganda. Mugabe and Kulabako (2016) quote URA tax register indicating only 882,000 taxpayers out of a working population of more than nine million. On this basis the study population of interest is actual and potential taxpayers in Uganda. Because we do not have an official list of the would-be taxpayers in Uganda at the time of data collection, our sample comprises of 384 (Krejcie and Morgan, 1970, gives this sample size where the population is 1,000,000 and above) citizens of Uganda aged 20 years and above. Because of the reason advanced above, we used convenience sampling method to arrive at the respondents. The survey was preceded by a pilot study questionnaire sent to 25 taxpayers excluding our target sample of 384 taxpayers. The pilot study helped us to assess the validity and understandability of our questionnaire. Based on the suggestions and comments received from the pilot study, the questionnaire was amended.

In total, 205 respondents responded to our questionnaire in the main study with usable responses. In terms of gender of the respondents, 85 were female while 120 indicated they were males. In terms of age, 78 respondents were between 20-30 years of age, 74 were between 31-40 years of age, 42 were between 41-50 years of age and 11 respondents were above 50 years of age. For marital status, 92 respondents were single, 99 were married and 14 were widowed. In terms of religion, 71 respondents were of the Catholic faith, 60 were of Anglican faith, 37 were of the Moslem faith and 37 respondents indicated that they were of the "other" religious faiths. In terms of geographical spread, 80 respondents were from central Uganda, 40 from Western Uganda, 38 from the Eastern Uganda and 47 respondents were from Northern Uganda. When it comes to education level, 17 respondents had stopped at secondary education, 35 were educated up to certificate or diploma level, 117 had been educated to a degree level, 33 had masters degrees and 3 educated up to PhD level. These frequencies suggest that respondents in the sample were fairly spread among the major characteristics of the sample.

Indeed, according to the Uganda Bureau of Statistics (2016), these sample characteristics represent a population of our interest. For example, while the gender characteristic may appear surprising because Uganda Bureau of Statistics (2016) shows that for almost all age groups above 20 years, the females are higher; the same source shows that there are more males than females in the working group category (p. 28). Moreover, more females are in subsistence agriculture (p. 30). This sector is ordinarily untaxed and thus it would not be expected that females would form the majority of the respondents. Similarly, about 82 percent of the sample is represented by three denominations. According to Uganda Bureau of Statistics (2016), Catholics, Anglicans and Moslems together account for more than 80 percent of the total population, with the Catholics forming the majority, followed by Anglicans and then Moslems. A relatively large sample is drawn from the central region because of the ten most populous districts in Uganda (with a population of 8,666,095), four are from the central region with a combined population 4,785,639 (or about 55 percent) (Uganda Bureau of Statistics, 2016). Moreover, the central region is home to Kampala, the capital of Uganda and one expects to find the largest taxpayers here.

Measurement of variables

For the outcome variable, tax compliance, this study utilized the measures identified by Simmons and Cheng (1996): perceptions of inequities in the tax system, perceptions of the level of taxation, perceptions of the WDPE, and perceptions of the extent of tax evasion. The predictor variables which are largely drawn from the tax administration literature were measured as follows: probability of detection, tax audits (Andreoni *et al.*, 1998) and influencing VA, GEF (Frey and Torgler, 2007). The respondents were asked to indicate their opinion on a five-point Likert scale from 1 (strongly disagree) through 3 (neutral) to 5 (strongly agree).

The questionnaire design

Given the objectives, it was important in questionnaire design to consider the recording of the response (Sudman and Bradburn, 1982; Sekaran, 2000). There are two ways in which this could be done. One approach was to use an open-answer format. Sudman and Bradburn (1982, p. 150) point out that the open format allows and encourages respondents to give their opinion fully and with as much nuance as they are capable. However, this approach appeared inapplicable in this research where the intention was to calculate the mean ratings of the extent of agreement with each statement. The alternative approach considered was a closed-answer format. Sudman and Bradburn (1982) point out that while closed answer questions are more difficult to construct, they are easier to analyze, particularly in the statistical sense. There is also less likelihood of researcher bias in summarizing the responses. This approach was more appropriate in this study for establishing not only the direction of the responses, but also the degree of intensity with which the views were held. As earlier mentioned, a five-point Likert (1961) scale, which allows the respondent to register the degree of agreement, was built in – allowing the respondent to register the degree of agreement with each statement. Consistent with the suggestion by Sekaran (2000) in developing a questionnaire, item analysis was performed to see whether the items in the instrument belong there and a pre-test was carried out to check validity and reliability to minimize on vagueness of the results generated. Reliability (internal consistency and stability) of the instruments was tested using Cronbach's α coefficient (Cronbach, 1951). As pointed out by Visser *et al.* (2000), our goal was to maximize the reliability and validity of data collected. Results of this test showed α as follows: tax compliance (perception of inequalities in the tax system, $\alpha = 0.685$; perceptions of level of taxation, $\alpha = 0.775$; perception of WDPE, $\alpha = 0.601$; and perception of the extent of tax evasion, $\alpha = 0.762$), tax administration (VA, $\alpha = 0.884$; TTS, $\alpha = 0.852$; and GEF, $\alpha = 0.841$).

Data analysis

In terms of data management, this was consistent with the recommendations by Field (2009) and Ibadin and Eiya (2013). In particular, data were cleaned, coded and entered in a Statistical Package for Social Scientists data editor and checked for missing values and also for outliers which are data points (observations) that do not fit the trend shown by the remaining data (Anderson *et al.*, 2007); they bias the mean and inflate the standard deviation (Field and Hole, 2003). The assumptions of normality, linearity of data and homogeneity of variance were found to be tenable. For example, the assumption of homogeneity of variance assumption was tested for using the Levene's test and for the variables of interest; the Levene's test was not significant at $p \leqslant 0.05$.

In terms of statistical modeling, we used structural equation modeling (SEM) with Analysis of Moment Structures version 18 for confirmatory factor analysis (measurement models) and fitting the structural equation model of tax compliance. The maximum likelihood estimation method was applied throughout the analysis. We also used the critical ratio (CR) which can be referred to the standard normal distribution to denote significance.

Thus, a value for the CR of 1.96 or higher (and –1.96 and lower), indicated two-sided significance at the customary 5 percent level. The overall fit of our models were tested using the following fit criteria: the χ^2-test p-value should be < 0.05; root mean square error of approximation (RMSEA) should be < 0.08, Tucker-Lewis index (TLI) values of 0.95 or higher, goodness of fit (GFI) > 0.90, adjusted goodness of fit index (AGFI) > 0.85, and comparative fit index (CFI) (Kim, 2007; Yang, 2006). In general, fit indices including incremental (IFI) and relative (RFI) should be close to 1 to indicate a very good fit. To test the impact of sample size on the p-value, the normed χ^2 (χ^2/df) should be 3.0 or less for good fit (Hair *et al.*, 2010). Due to the sensitivity of χ^2 to sample size and lack of a defined power function (Fornell and Larker, 1981), when the results of these various indices are satisfactory it means that the p-value that is less than 0.05 is due to the effect of larger sample size. We also compared two SEM specification models to determine the best model. We employed Morgan and Hunt (1994) four different criteria in a SEM model comparison: overall model fit as measured by CFI; percentage of hypothesized significant paths; amount of variance explained as measured by squared multiple correlations (SMC); and parsimony assessed by the parsimonious normed fit index (NFI).

4. Results and discussion

Descriptive statistics

We generated means and standard deviations to summarize the observed data. We also report the skewness and kurtosis statistics in order to assess normality among single variables. According to Field (2009), the values of skewness and kurtosis should be near 0 in a normal distribution. Skew is a tilt in a distribution and Kurtosis is the peakedness of a distribution. Skewness and Kurtosis statistics for normal data ranges between −3.29 and 3.29 (Field, 2009). Positive values of Skewness show a pile up of scores on the left of the distribution and negative values indicate a pile up of scores on the right (Field, 2009). According to Garson (2012), Skewness and Kurtosis statistics should be within the +2 to −2 range, though for kurtosis a more lenient +3 to −3 range can also show normality. Using these benchmarks, the normality of the data was tenable (Table I) corroborated by the probability-probability plots presented in Figures 1 and 2. From the central limit theorem, if sample data are approximately normal, then the sampling distribution will be also, and, if actual values of z-score are plotted against the expected scores and they fall on the diagonal of the plot then the variable is normally distributed (Field, 2009).

For completeness, we report the means of both observed and latent variables as fitted. We report the means because according to Field (2009), means represent a summary of the data while standard deviations show how well the means represent the data. The main purpose is to establish whether the statistical means were a good fit of the observed data (Field, 2009). Table I reveals that all mean scores of the items range from 2.327 to 3.161 with the standard deviations from 0.667 to 1.339. Because of small standard deviations compared to mean values, it is clear that the data points are close to the means and hence the calculated means highly represented the observed data (Field, 2009; Saunders *et al.*, 2007). Based on the means, tax administration as represented by VA, TTS and GEF was perceived to be weak. Again based on the means, tax compliance in Uganda as represented by perceived WDPE and inequalities in the tax system is also weak.

Hypotheses testing

Our theoretical model specifies a positive relationship between perceived elements of tax administration and perceived tax compliance (*H3*). Moreover, we specified that perceptions of tax administration increase when the level of tax education, tax audit, VA, GEF, TTS and probability of detection are present (*H1*); and also specified that perceptions of tax compliance increase when there is no tax evasion, no inequalities in the tax system, there is

Table I.
Descriptive statistics

	n	Stat. Min.	Stat. Max.	Stat. Mean	SD	Skewness Stat.	Skewness SE	Kurtosis Stat.	Kurtosis SE
CompDE1_Overall the way in which government spends taxpayers' money is responsible and appropriate	205	1.00	5.00	2.327	1.235	0.633	0.170	−0.760	0.338
CompDE3_The government spends a reasonable amount of taxpayers' money on welfare	205	1.00	5.00	2.639	1.267	0.254	0.170	−1.129	0.338
CompDE5_Considering the social benefits provided, taxes are not high	205	1.00	5.00	2.600	1.251	0.552	0.170	−0.856	0.338
Perceived worth and distribution of public expenditure	205	1.00	5.00	2.522	0.933	0.256	0.170	−0.458	0.338
CompIne2_Sanctions for tax non-compliance are systematically applied	205	1.00	5.00	3.010	1.116	−0.169	0.170	−0.922	0.338
CompIne3_My overall tax burden is no more than similarly situated taxpayers	205	1.00	5.00	3.049	1.187	−0.077	0.170	−0.938	0.338
CompIne4_The tax rate is fair as it is the same for everyone	205	1.00	5.00	2.810	1.339	0.093	0.170	−1.379	0.338
CompIne6_I trust that other taxpayers are paying their share of taxes	205	1.00	5.00	3.000	1.310	−0.079	0.170	−1.251	0.338
CompIne7_There is no violation of rules of fairness on the part of the tax authorities	205	1.00	5.00	2.829	1.182	0.012	0.170	−1.111	0.338
Perception of inequalities in the tax system	205	1.20	5.00	2.940	0.803	0.040	0.170	−0.598	0.338
CompLT5_I get a fair value for my income taxes in terms of benefits received from government	205	1.00	5.00	2.493	1.259	0.523	0.170	−0.867	0.338
CompLT6_Benefits received from government in exchange for my income tax are reasonable	205	1.00	5.00	2.415	1.154	0.452	0.170	−0.917	0.338
CompLT8_Income taxes I pay are reasonable considering the benefits provided by government	205	1.00	5.00	2.546	1.210	0.544	0.170	−0.859	0.338
Perception of level of taxation	205	1.00	5.00	2.485	1.005	0.471	0.170	−0.649	0.338
Tax compliance	205	1.18	4.27	2.649	0.667	0.108	0.170	−0.544	0.338
TadVA1_I am satisfied with the way democracy operates	205	1.00	5.00	2.585	1.100	0.347	0.170	−0.959	0.338
TadVA4_Human rights are respected	205	1.00	5.00	2.834	1.314	0.114	0.170	−1.281	0.338
TadVA5_Freedom of association is guaranteed	205	1.00	5.00	2.898	1.270	0.136	0.170	−1.231	0.338
TadVA6_Citizens have trust in parliament	205	1.00	5.00	2.771	1.336	0.191	0.170	−1.227	0.338
Voice and accountability	205	1.00	5.00	2.772	1.063	0.250	0.170	−0.884	0.338
TTS1_The tax system is easy to understand	205	1.00	5.00	3.029	1.167	0.017	0.170	−1.248	0.338
TTS2_The tax system reduces taxpayers' uncertainty	205	1.00	5.00	3.049	1.137	−0.157	0.170	−1.177	0.338
TTS3_It is easy to plan for future employment, investment and consumption	205	1.00	5.00	2.976	1.202	−0.004	0.170	−1.262	0.338
TTS5_The tax system is credible	205	1.00	5.00	3.161	1.141	−0.360	0.170	−0.940	0.338
Transparent tax systems	205	1.00	4.75	3.054	0.914	−0.140	0.170	−0.950	0.338
TadGE5_External debt is well managed	205	1.00	5.00	2.727	1.113	0.277	0.170	−0.800	0.338
TadGE6_Development programs are well managed	205	1.00	5.00	2.815	1.227	0.295	0.170	−1.073	0.338
TadGE7_The Public Financial Management System is efficient	205	1.00	5.00	2.844	1.258	0.209	0.170	−1.166	0.338
Governmental effectiveness	205	1.00	5.00	2.795	1.038	0.232	0.170	−0.920	0.338
Tax administration	205	1.25	4.81	2.874	0.768	0.120	0.170	−0.600	0.338
Valid *n* (listwise)	205								

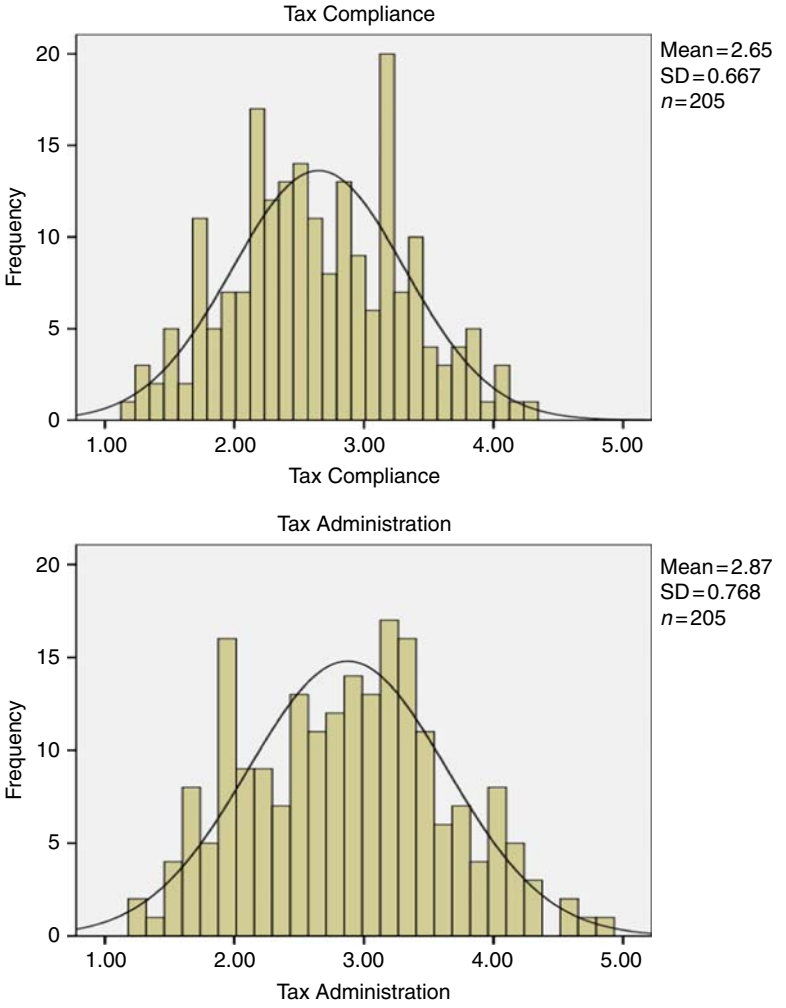


Figure 1.
Histograms of tax compliance and also tax administration

lower level of taxation and higher level of the WDPE (*H2*). We argued that taxpayers' perceptions indicate their predisposition to tax compliance and so we are presenting tax compliance as a taxpayer's decision that is informed by perceptions. We therefore suggested that factors increasing the taxpayer's perceptions about tax administration relate to the importance that their perceptions have in their tax compliance decisions. The analysis in this paper creates a measurement model to test the effects of the observed indicator variables (extent of tax evasion, perception of ITS, perception of level of taxation and perception of the WDPE) on an unobserved outcome variable that we called tax compliance factors. The analysis also creates a measurement model to test the effects of the observed indicator variables (VA, TTS and GEF) on an unobserved latent predictor variable that we called tax administration factors; others having dropped because of measurement variance.

Accordingly, to answer our first research question we use the CFA to establish the measurement portion of tax compliance. This analysis allowed for the determination of whether the shared variance-covariance of the observed variables defined the latent constructs. It also

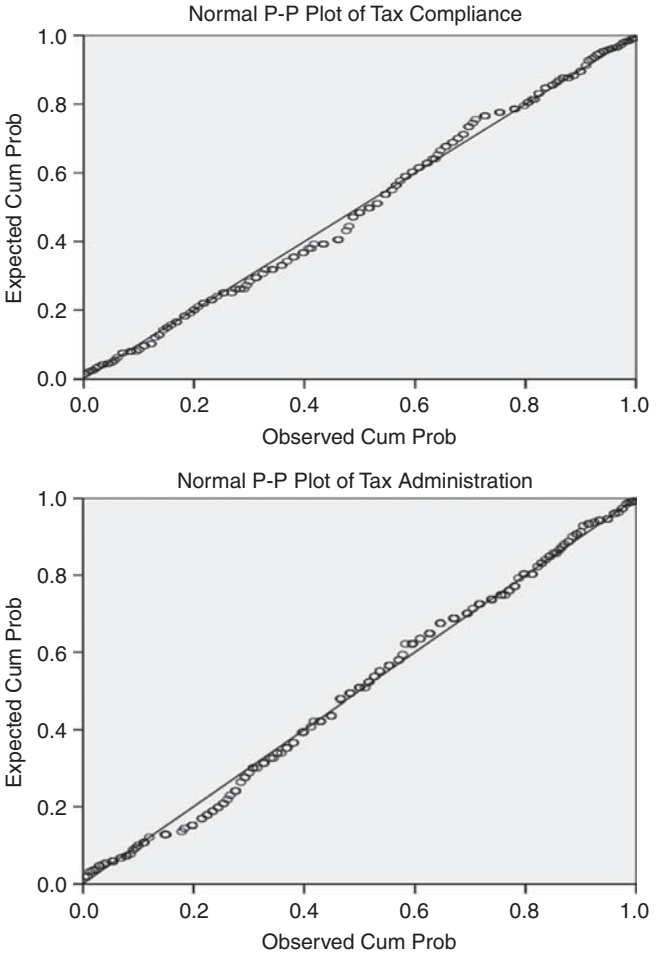


Figure 2.
Probability-probability (P-P) plot for tax compliance and also tax administration

provided a more precise way to account for the error variances associated with the variables, which if untested could lead to biased parameter estimates (Schumacker and Lomax, 2010). Figure 3 (see Table II for path coefficients) presents the measurement model for tax compliance assuming a structural equation between four latent items (perceptions of inequalities in the tax system, perceptions of the level of taxation, perceptions of the worth and distribution of tax expenditure and perceptions of the extent of tax evasion) and tax compliance (χ^2 (83) = 118.282, $p < 0.007$; χ^2/df = 1.425; RMSEA = 0.046; GFI = 0.930; CFI = 0.949; TLI = 0.935). This model is then pitted against the model in Figure 4 that does not assume a structural equation between the four latent items and tax compliance (χ^2(90) = 497.102, $p < .001$; χ^2/df = 5.523; RMSEA = 0.149; GFI = 0.716; CFI = 0.407; TLI = 0.308). The measurement potion of tax compliance presented in Figure 3 is found to be the better model and also reflects a good model fit. Table II relative to path coefficients for the model in Figure 4 shown in Table III shows that all the CRs are > 1.96 and p-values are < 0.001, connoting significance. Given that SMC are all above 0.20 (which reveals item reliability), tax compliance and its dimensions account for a large percentage of the variance in the measured items. The model in Figure 3 therefore suggests that there is no

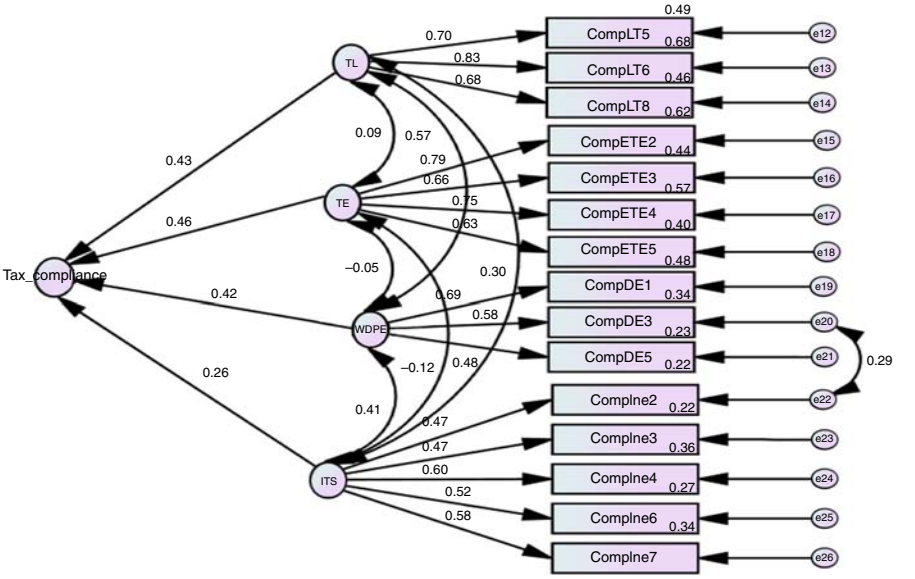


Figure 3.
Path Diagram 1 – measurement model for tax compliance assuming a structural equation between four latent variables and tax compliance

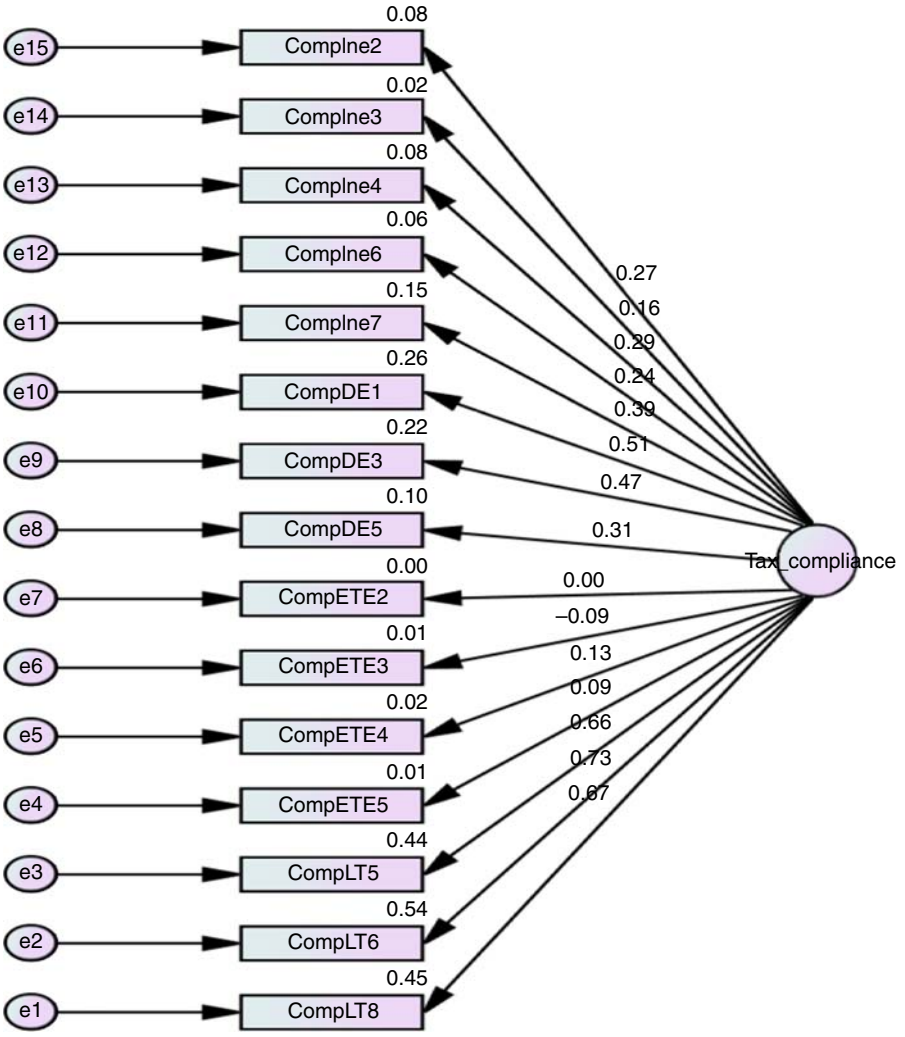
Notes: CFA for tax compliance: TL, perceptions of level taxation; TE, perception of extent of tax evasion; WDPE, perceptions of worth and distribution of public expenditure; ITS, perceptions of inequalities in the tax system. $\chi^2 = 118.282$; $p = 0.007$; df = 83; $\chi^2/\text{df} = 1.425$; GFI = 0.930; AGFI = 0.899; TLI = 0.935; IFI = 0.950; RFI = 0.811; NFI = 0.851; CFI = 0.949; RMSEA = 0.046

	B	SE	CR	*β*	SMC	*p*
CompLT5 ← TL	1.000			0.702	0.493	
CompLT6 ← TL	1.080	0.125	8.670	0.827	0.684	***
CompLT8 ← TL	0.933	0.114	8.164	0.681	0.464	***
CompETE2 ← TE	1.000			0.787	0.619	
CompETE3 ← TE	0.825	0.097	8.481	0.660	0.435	***
CompETE4 ← TE	0.966	0.103	9.354	0.752	0.566	***
CompETE5 ← TE	0.854	0.105	8.115	0.629	0.396	***
CompDE1 ← WDPE	1.000			0.694	0.482	
CompDE3 ← WDPE	0.867	0.157	5.520	0.583	0.340	***
CompDE5 ← WDPE	0.705	0.143	4.943	0.483	233	***
CompIne2 ← ITS	1.000			0.473	0.224	
CompIne3 ← ITS	1.064	0.248	4.286	0.473	0.223	***
CompIne4 ← ITS	1.515	0.317	4.782	0.597	0.356	***
CompIne6 ← ITS	1.290	0.286	4.506	0.519	0.270	***
CompIne7 ← ITS	1.301	0.275	4.733	0.580	0.337	***
Tax compliance ← TE	1.000			0.462		
Tax compliance ← TL	1.000			0.434		
Tax compliance ← WDPE	1.000			0.421		
Tax compliance ← ITS	1.000			0.259		

Table II.
CFA model estimates for tax compliance

Note: ***p (two-tailed) values are < 0.001

significant difference between the hypothesized and observed factors of perceived tax compliance among taxpayers in Uganda. Accordingly, the model of perceived grounds for tax non-compliance or compliance behaviors and perceived tax compliance factors is substantiated and, hence, *H2*.



Notes: CFA for tax compliance: $\chi^2=497.102$; $p=0.000$; df=90; $\chi^2/df=5.523$; GFI=0.716; AGFI=0.622; TLI=0.308; IFI=0.419; RFI=0.267; NFI=0.372; CFI=0.407; RMSEA=0.149

Figure 4.
Path Diagram II for tax compliance not assuming a structural equation between four latent items and tax compliance

This result of testing *H2* illustrates that:

(1) Perceptions of extent of tax evasion will increase when:

- ComplETE2 – tax fraud is so common that one cannot be blamed for evading taxes (*R*);
- ComplETE3 – in consideration of the burden of taxes, one cannot be blamed for tax fraud (*R*);
- ComplETE4 – considering the burden of taxes, one cannot be blamed for tax fraud (*R*); and

	B	SE	CR	*β*	SMC	*p*
CompLT8 ← Tax compliance	1.000			0.670	0.449	
CompLT6 ← Tax compliance	1.046	0.129	8.097	0.735	0.540	***
CompLT5 ← Tax compliance	1.025	0.136	7.556	0.661	0.436	***
CompETE5 ← Tax compliance	0.147	0.124	1.189	0.093	0.009	0.234
CompETE4 ← Tax compliance	0.193	0.117	1.643	0.129	0.017	0.100
CompETE3 ← Tax compliance	−0.133	0.114	−1.166	−0.092	0.008	0.243
CompETE2 ← Tax compliance	0.007	0.116	0.062	0.005	0.000	0.951
CompDE5 ← Tax compliance	0.479	0.124	3.872	0.310	0.096	***
CompDE3 ← Tax compliance	0.736	0.129	5.705	0.472	0.222	***
CompDE1 ← Tax compliance	0.771	0.127	6.074	0.506	0.256	***
CompIne7 ← Tax compliance	0.573	0.118	4.839	0.394	0.155	***
CompIne6 ← Tax compliance	0.391	0.128	3.049	0.242	0.059	0.002
CompIne4 ← Tax compliance	0.474	0.132	3.595	0.287	0.083	***
CompIne3 ← Tax compliance	0.230	0.115	1.991	0.157	0.025	0.046
CompIne2 ← Tax compliance	0.377	0.110	3.437	0.274	0.075	***

Note: ***p (two-tailed) values are < 0.001

Table III.
CFA model estimates for tax compliance

- ComplETE5 – no one should blame tax evaders because of the easily available opportunities to evade(*R*).

(2) Perceptions of ITS will reduce when:

- Complne2 – sanctions for tax non-compliance are systematically applied;
- Complne3 – overall burden of individual taxpayers is no more than similarly situated taxpayers;
- Complne4 – the tax rate is fair as it is the same for everyone;
- Complne6 – there is trust that other taxpayers are paying their fair share of taxes; and
- Complne7 – there is no violation of rules of fairness on the part of the tax authorities.

(3) Perceptions of level of taxation will improve when:

- CompLT5 – taxpayers get a fair value for their income taxes in terms of benefits received from government;
- CompLT6 – the benefits received from government in exchange for taxpayer's income tax are reasonable; and
- CompLT8 – income taxes paid are reasonable considering the benefits provided by government.

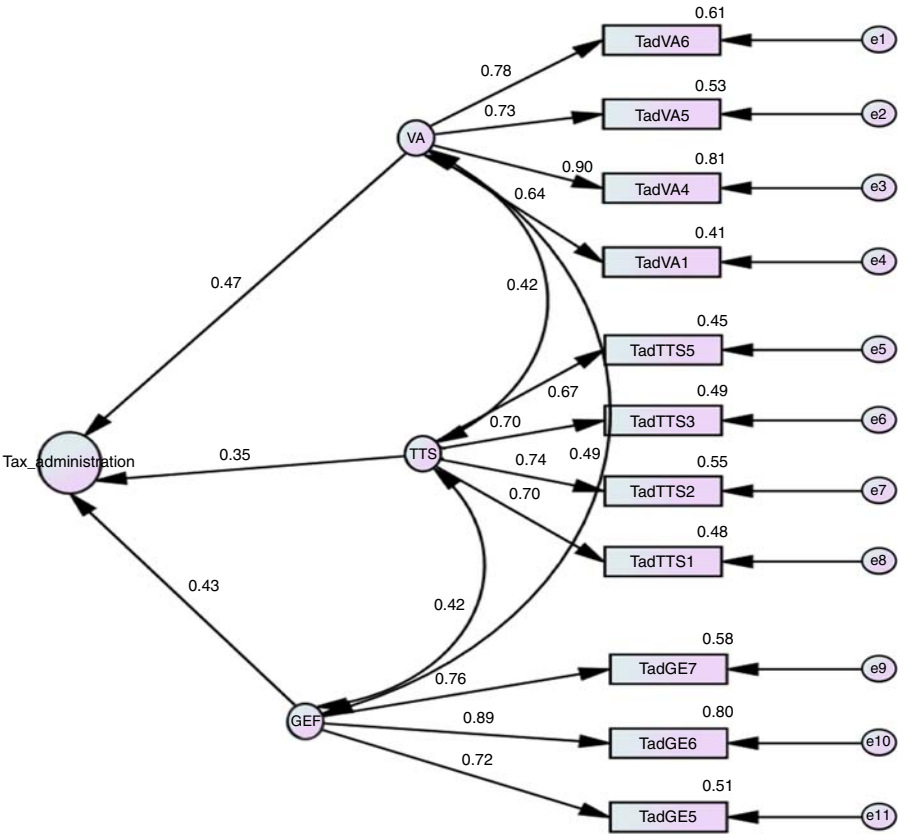
(4) Perceptions of the WDPE will increase when:

- CompDE1 – the way in which government spends taxpayers' money is responsible and appropriate;
- CompDE3 – the government spends a reasonable amount of taxpayers' money on welfare; and
- CompDE5 – taxpayers in consideration of the social benefits provided, taxes are not high.

(5) Perceptions of tax compliance will increase when:

- perceptions of the WDPE increase;
- perceptions of level of taxation reduce;
- perceptions of ITS reduce; and
- perceptions of tax evasion reduce.

Similarly, to answer the second research question we used the CFA to establish the measurement portion of tax compliance. Figure 5 presents the measurement model for tax administration assuming a structural equation between three latent items (VA, TTS and GEF) and tax administration (χ^2 (41) = 61.247, $p < 0.022$; χ^2/df = 1.494; RMSEA = 0.049; GFI = 0.950; CFI = 0.978; TLI = 0.970). This model is then pitted against the model in Figure 6 that does not assume a structural equation between the three latent items and tax administration (χ^2 (44) = 400.130, $p < 0.001$; χ^2/df = 9.094 RMSEA = 0.199; GFI = 0.685;



Notes: Measurement model for tax administration: VA, voice and accountability; TTS, transparent tax system; GEF, governmental effectiveness. χ^2=61.247; p=0.022; df=41; χ^2/df=1.494; GFI=0.950; AGFI=0.920; TLI=0.970; IFI=0.978; RFI=0.915; NFI=0.937; CFI=0.978; RMSEA=0.049

Figure 5.
Path Diagram III assuming a structural equation between three latent items and tax administration

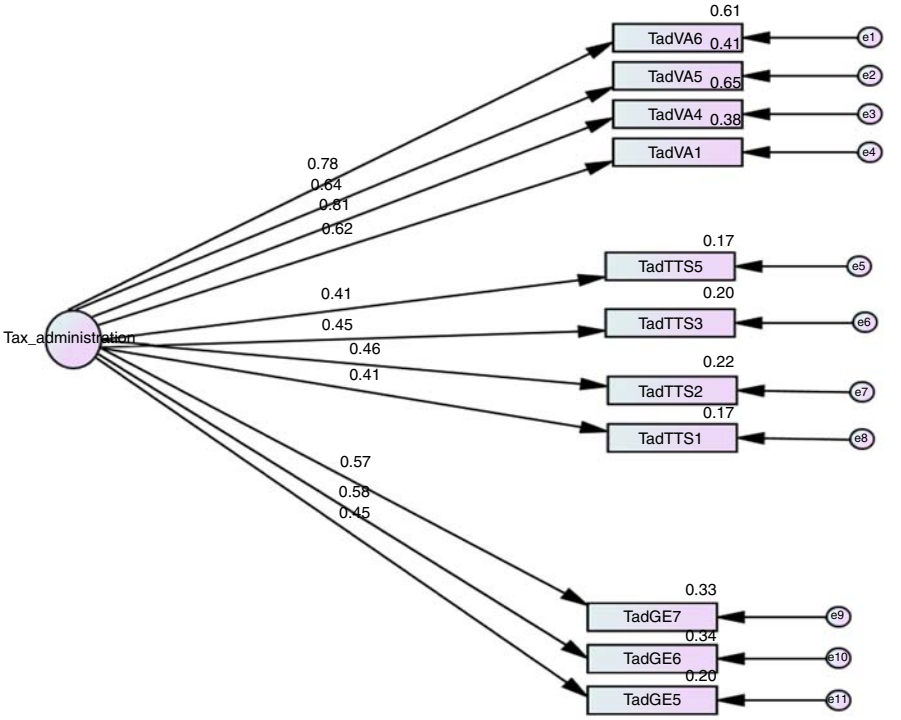


Figure 6.
Path diagram IV not assuming a structural equation between three latent variables and tax administration

Notes: CFA for tax administration: χ^2=400.130; p=0.000; df=44; χ^2/df=9.094; GFI=0.685; AGFI=0.527; TLI=0.515; IFI=0.616; RFI=0.486; NFI=0.588; CFI=0.612; RMSEA=0.199

CFI = 0.612; TLI = 0.515). The measurement portion of tax administration presented in Figure 5 (see also Table IV for model estimates) is found to be the better model. All the unconstrained parameter estimates were significant at p (two-tailed) < 0.001 and all their CR are > 1.96. Tax education, tax audit and probability of detection dropped because of

	B	SE	CR	*β*	SMC	*p*
TadVA6 ← VA	1.000			0.783	0.613	
TadVA5 ← VA	0.887	0.083	10.707	0.731	0.534	***
TadVA4 ← VA	1.132	0.088	12.904	0.901	0.812	***
TadVA1 ← VA	0.738	0.080	9.253	0.644	0.414	***
TadTTS5 ← TTS	1.000			0.672	0.451	
TadTTS3 ← TTS	1.092	0.137	7.967	0.696	0.485	***
TadTTS2 ← TTS	1.098	0.133	8.283	0.740	0.548	***
TadTTS1 ← TTS	1.060	0.133	7.965	0.696	0.485	***
TadGE7 ← GEF	1.000			0.762	0.581	
TadGE6 ← GEF	1.144	0.102	11.194	0.894	0.800	***
TadGE5 ← GEF	0.832	0.083	9.972	0.717	0.514	***
Tax administration ← VA	1.000			0.474		
Tax administration ← TTS	1.000			0.347		
Tax administration ← GEF	1.000			0.434		

Note: ***p (two-tailed) values are < 0.001

Table IV.
CFA model estimates for tax administration

measurement variance. The model in Figure 5 therefore suggests that there is no significant difference between the hypothesized and observed factors of perceived tax administration (compliance factors) among taxpayers in Uganda. Accordingly, the model of perceived compliance factors and perceived tax administration is substantiated and, hence, *H1* (Table V).

This result of testing *H1* then illustrates that:

(1) Perceptions of VA will increase when:
   - TadVA1 – taxpayers are satisfied with the way democracy operates;
   - TadVA4 – human rights are respected;
   - TadVA5 – freedom of association is guaranteed; and
   - TadVA6 – citizens have trust in parliament.

(2) Perceptions of TTS will increase when:
   - TTS1 – the tax system is easy to understand;
   - TTS2 – the tax system reduces taxpayers' uncertainty;
   - TTS3 – it is easy to plan for future employment, investment and consumption; and
   - TTS5 – the tax system is credible.

(3) Perceptions of GEF will increase when:
   - TadGE5 – external debt is well managed;
   - TadGE6 – development programmes are well managed; and
   - TadGE7 – the public financial management system is efficient;

(4) Perceptions of tax administration will increase when:
   - VA increases;
   - transparency of tax system increases; and
   - GEF increases.

To assess the relationship between the perceived grounds for tax non-compliance or compliance behaviors and perceived tax compliance factors (*H3*) and therefore answer the third research question, we examined the overall SEM model specification with three latent

	B	SE	CR	*β*	SMC	*p*
TadTTS3 ← tax administration	1.079	0.230	4.687	0.446	0.199	***
TadTTS5 ← tax administration	0.934	0.211	4.419	0.407	0.166	***
TadVA1 ← tax administration	1.494	0.267	5.589	0.619	0.383	***
TadVA4 ← tax administration	2.139	0.345	6.191	0.809	0.655	***
TadVA5 ← tax administration	1.642	0.289	5.685	0.643	0.413	***
TadVA6 ← tax administration	2.092	0.342	6.117	0.778	0.606	***
TadTTS2 ← tax administration	1.061	0.221	4.801	0.464	0.215	***
TadTTS1 ← tax administration	0.965	0.217	4.449	0.411	0.169	***
TadGE7 ← tax administration	1.455	0.270	5.397	0.575	0.330	***
TadGE6 ← tax administration	1.433	0.264	5.425	0.581	0.337	***
TadGE5 ← tax administration	1.000			0.447	0.199	

Note: ***p (two-tailed) values are < 0.001

Table V.
CFA model estimates for tax administration

items for tax administration and three latent items for tax compliance. This model which we pitted against Model 1 in Figure 7 (χ^2 (290) = 432.546, $p < 0.000$; χ^2/df = 1.491; NFI = 0.795; RMSEA = 0.049; GFI = 0.863; CFI = 0.920; TLI = 0.910) is presented in Figure 8 as Model 2 (χ^2 (243) = 348.234, $p < 0.000$; χ^2/df = 1.433; NFI = 0.812; RMSEA = 0.046; GFI = 0.881; CFI = 0.933; TLI = 0.924). Model 1 includes four latent factors for tax compliance including tax evasion, whereas Model 2 does not include the latent variable, tax evasion. So Model 2 has three latent factors for tax compliance. While control variables are not significant, we do not include any control variable in Model 1; in Model 2 we do. In Model 1 (see also Table VI for path coefficients), the β coefficient turns out to be negative while that of Model 2 (see also Table VII for path coefficients) is positive. Table VIII provides a summary of the fit statistics and other comparison criteria for the two models.

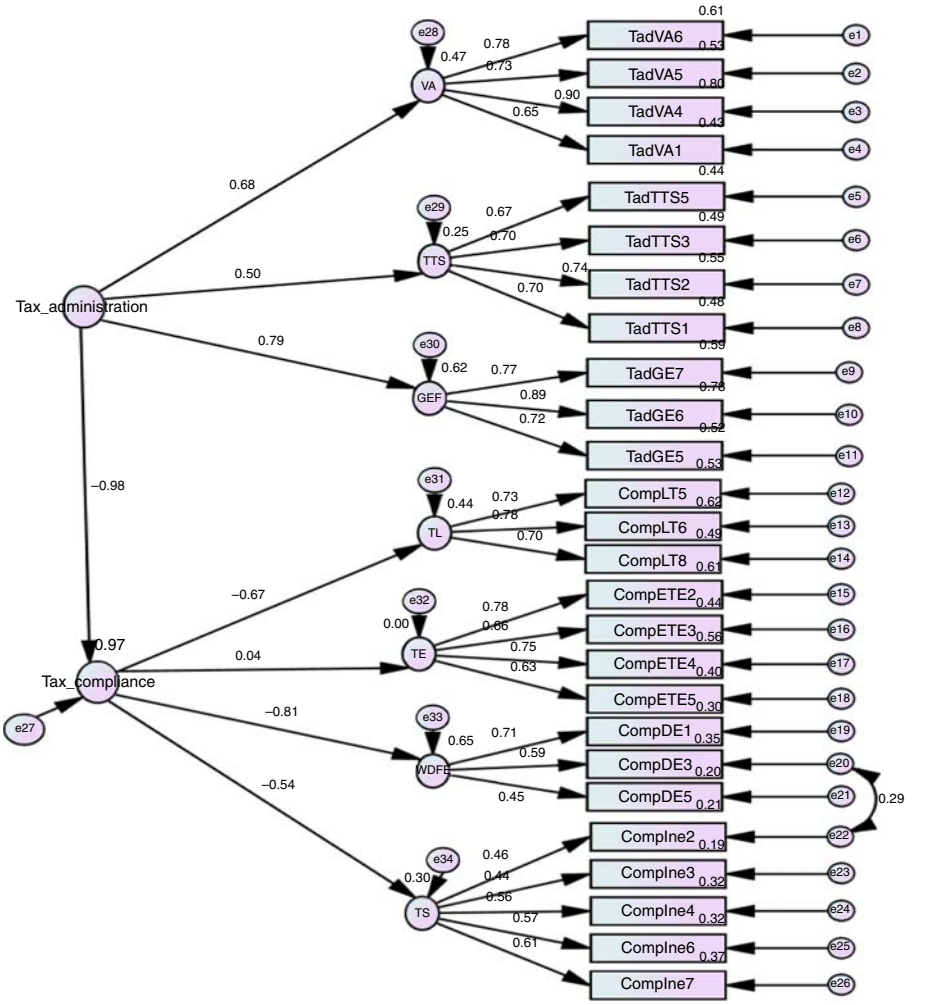
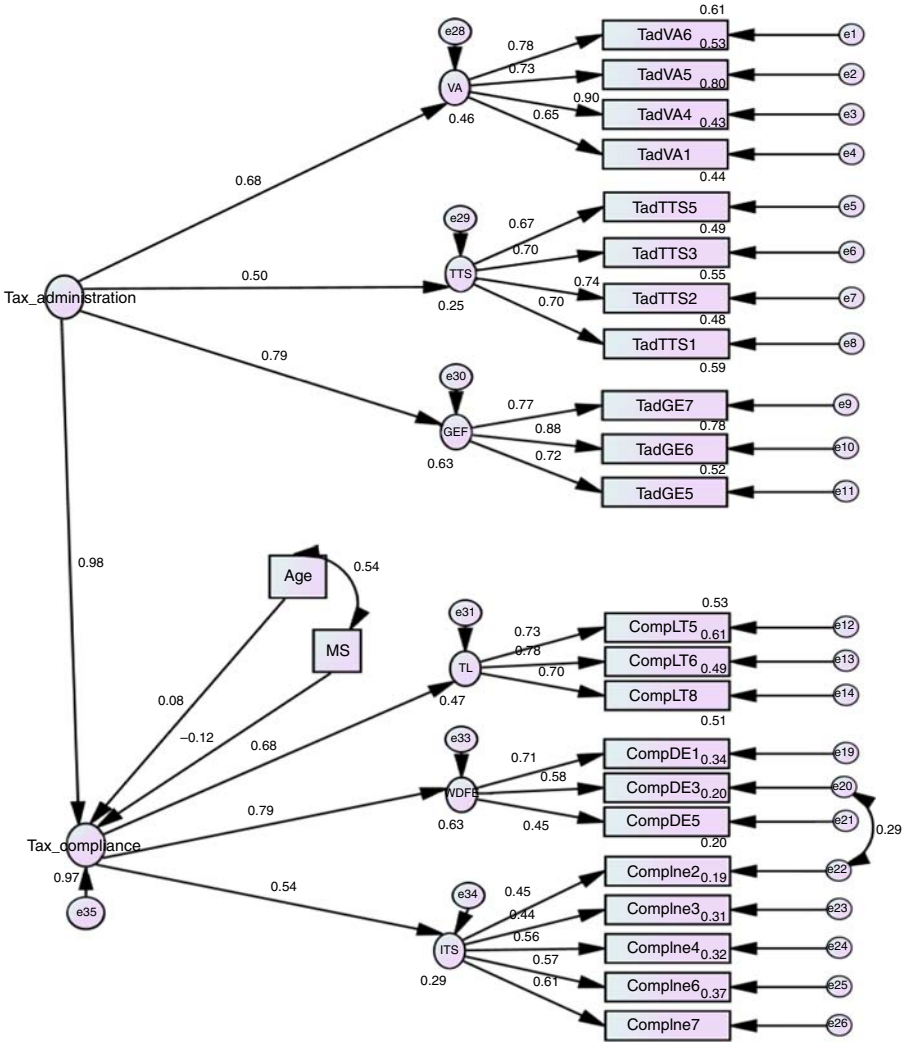


Figure 7.
Model 1 – overall SEM specification with three latent items for tax administration and four latent items for tax compliance but without control variables

Notes: SEM model 1: χ^2 = 432.546; p = 0.000; df = 290; χ^2/df = 1.491; GFI = 0.863; AGFI = 0.834; TLI = 0.910; IFI = 0.922; RFI = 0.770; NFI = 0.795; CFI = 0.920; RMSEA = 0.049



Notes: SEM model 2: $\chi^2 = 348.234$; $p = 0.000$; df = 243; $\chi^2/\text{df} = 1.433$; GFI = 0.881; AGFI = 0.853; TLI = 0.924; IFI = 0.935; RFI = 0.786; NFI = 0.812; CFI = 0.933; RMSEA = 0.046

Figure 8.
Model 2 – overall SEM specification with three latent items for tax administration and three latent items for tax compliance but with control variables

Using Morgan and Hunt (1994) criteria for SEM model comparison indicated in Section 3, it appears Model 2 is the better model. However, the difference between the two models may be trivial. Hence, additionally, we conducted a χ^2 difference test. We supposed that Model 1 is the stronger model of the two models. In a sense that it represents the stronger hypothesis about the population parameters; Model 2 would then be the weaker model because Model 1 has the greater degrees of freedom (df). The χ^2 for Model 1 is larger than the χ^2 statistic for Model 2. Accordingly, to cross-validate Model 1 against Model 2, we subtracted the smaller χ^2 statistic from the larger one, hence, 84.312 (that is 432.546-348.234). If Model 1 was correctly specified, this statistic would be an approximate χ^2

	B	SE	CR	*β*	SMC	*p*
Tax compliance ← tax administration	−0.102	0.216	−0.471	−0.985	0.970	0.638
WDPE ← tax compliance	−18.085	38.295	−0.472	−0.809	0.655	0.637
GEF ← tax administration	2.007	0.425	4.726	0.788	0.621	***
TL ← tax compliance	−15.596	33.038	−0.472	−0.667	0.445	0.637
ITS ← tax compliance	−7.056	15.005	−0.470	−0.545	0.297	0.638
VA ← tax administration	1.885	0.409	4.614	0.683	0.466	***
TE ← tax compliance	1.000			0.042	0.002	
TTS ← tax administration	1.000			0.498	0.248	
TadVA6 ← VA	1.000			0.782	0.612	
TadVA5 ← VA	0.887	0.083	10.691	0.731	0.534	***
TadVA4 ← VA	1.128	0.087	12.962	0.897	0.805	***
TadVA1 ← VA	0.750	0.080	9.405	0.653	0.427	***
TadTTS5 ← TTS	1.000			0.666	0.444	
TadTTS3 ← TTS	1.103	0.140	7.908	0.698	0.487	***
TadTTS2 ← TTS	1.113	0.135	8.227	0.744	0.554	***
TadTTS1 ← TTS	1.068	0.135	7.894	0.696	0.484	***
TadGE7 ← GEF	1.000			0.767	0.588	
TadGE6 ← GEF	1.126	0.096	11.762	0.885	0.784	***
TadGE5 ← GEF	0.834	0.082	10.146	0.723	0.522	***
CompLT5 ← TL	1.000			0.728	0.530	
CompLT6 ← TL	0.989	0.110	8.953	0.785	0.616	***
CompLT8 ← TL	0.924	0.109	8.457	0.699	0.489	***
CompETE2 ← TE	1.000			0.783	0.614	
CompETE3 ← TE	0.831	0.098	8.458	0.661	0.437	***
CompETE4 ← TE	0.970	0.104	9.292	0.752	0.565	***
CompETE5 ← TE	0.863	0.106	8.128	0.633	0.401	***
CompDE1 ← WDPE	1.000			0.709	0.503	
CompDE3 ← WDPE	0.859	0.136	6.295	0.589	0.347	***
CompDE5 ← WDPE	0.638	0.126	5.061	0.446	0.199	***
CompIne2 ← ITS	1.000			0.455	0.207	
CompIne3 ← ITS	1.025	0.251	4.082	0.438	0.192	***
CompIne4 ← ITS	1.482	0.319	4.643	0.562	0.315	***
CompIne6 ← ITS	1.463	0.314	4.660	0.567	0.321	***
CompIne7 ← ITS	1.419	0.296	4.789	0.609	0.371	***

Note: ***p (two-tailed) values are < 0.001

Table VI.
Path coefficients for SEM Model 1

distribution with df equal to the difference between the df of the two models. The difference in df is 47 (i.e. 290-243); suggesting that Model 1 imposes all of the parameter constraints of Model 2 plus an additional 47. If Model 1 was correct, the value of 84.312 would have come from a χ^2 distribution of 47 df. If only Model 2 was correct and not Model 1, the new statistic would tend to be large. Hence, Model 1 had to be rejected in favor of Model 2 when the new χ^2 statistic is unusually large. With 47 df, the χ^2 values greater than 67.505 (obtained from the χ^2 distribution table) are significant at the 0.05 level. Based on Morgan and Hunt (1994) criteria and on this test we rejected Model 1 in favor of Model 2. All the unconstrained parameter estimates in Model 2 are significant at p (two-tailed) < 0.001 and all their CR are > 1.96.

Model 2 in Figure 8 shows that perceived tax administration as indicated by VA, TTS and GEF accounts for almost all the variance (with an R^2 or SMC = 0.98 at 1 percent level or better) in perceived tax compliance as indicated by ITS, WDPE and level of taxation (TL). The results of testing *H3* mean that for a developing country like Uganda tax compliance mirrors taxpayers' perceptions about the prevailing tax administration complexion.

	B	SE	CR	β	SMC	p
Tax compliance ← tax administration	1.617	0.371	4.365	0.981	0.973	***
Tax compliance ← age	0.029	0.031	0.937	0.079		0.349
Tax compliance ← MS	−0.120	0.087	−1.386	−0.117		0.166
WDPE ← tax compliance	1.110	0.197	5.645	0.792	0.627	***
GEF ← tax administration	2.018	0.425	4.749	0.795	0.632	***
ITS ← tax compliance	0.434	0.115	3.769	0.539	0.291	***
VA ← tax administration	1.858	0.403	4.613	0.675	0.456	***
TTS ← tax administration	1.000			0.500	0.250	
TL ← tax compliance	1.000			0.684	0.468	
TadVA6 ← VA	1.000			0.783	0.613	
TadVA5 ← VA	0.887	0.083	10.704	0.731	0.535	***
TadVA4 ← VA	1.126	0.087	12.952	0.897	0.804	***
TadVA1 ← VA	0.749	0.080	9.400	0.653	0.426	***
TadTTS5 ← TTS	1.000			0.666	0.444	
TadTTS3 ← TTS	1.105	0.140	7.917	0.699	0.488	***
TadTTS2 ← TTS	1.112	0.135	8.225	0.744	0.553	***
TadTTS1 ← TTS	1.067	0.135	7.890	0.695	0.483	***
TadGE7 ← GEF	1.000			0.768	0.589	
TadGE6 ← GEF	1.123	0.095	11.782	0.884	0.781	***
TadGE5 ← GEF	0.834	0.082	10.163	0.723	0.523	***
CompLT5 ← TL	1.000			0.728	0.531	
CompLT6 ← TL	0.986	0.110	8.991	0.784	0.614	***
CompLT8 ← TL	0.922	0.109	8.470	0.698	0.488	***
CompDE1 ← WDPE	1.000			0.712	0.507	
CompDE3 ← WDPE	0.845	0.137	6.187	0.582	0.339	***
CompDE5 ← WDPE	0.640	0.126	5.059	0.450	0.202	***
CompIne2 ← ITS	1.000			0.453	0.205	
CompIne3 ← ITS	1.032	0.254	4.069	0.438	0.192	***
CompIne4 ← ITS	1.488	0.322	4.619	0.561	0.314	***
CompIne6 ← ITS	1.478	0.318	4.648	0.569	0.324	***
CompIne7 ← ITS	1.422	0.299	4.759	0.607	0.368	***

Table VII.
Path coefficients for SEM Model 2

	SEM Model 1	SEM Model 2
Number of significant hypothesized paths	21	21
χ^2	432.546	348.234
df	290	243
p	0.000	0.000
χ^2/df	1.492	1.433
Standardized β coefficient	−0.985	0.981
SMC	0.970	0.973
GFI	0.863	0.881
AGFI	0.834	0.853
TLI	0.910	0.924
IFI	0.922	0.935
RFI	0.770	0.786
NFI	0.795	0.812
CFI	0.920	0.933
RMSEA	0.049	0.046

Table VIII.
Comparing Model 2 against Model 1

Discussion

The results reported in this study suggest three themes:

(1) Perceived GEF, TTS and VA explanations of perceived tax compliance have a predictive force in Uganda.

This positive influence implies that it is likely that when the taxpayers exchange with government (e.g. in terms of its effectiveness), tax compliance will improve as indicated by positive perceptions of the WDPE, level of taxation and equalities in tax system. Therefore, in Uganda, government's effectiveness for example can trigger voluntary tax compliance and eliminate undesired consequences of tax evasion and accompanying underground economy – turning out to be a very useful tool to encourage tax compliance. Taxpayers are more likely to be tax compliant if they perceive the tax administration system to advance GEF and VA. This result is consistent with Ibrahim *et al.* (2015) who found that trust in the government positively drive tax compliance and interpreted this to mean that the likelihood of paying tax is higher if people have trust in the government entrusted with managing the affairs of the country. As Ibrahim *et al.* (2015) have put it, this indicates the extent that tax is viewed as the price of public goods and services and reflects *a quid pro quo* phenomenon. The findings here also concur with those of Cumming *et al.* (2009) – if government effectively improves infrastructure, e.g., then taxpayers/citizens would be more willing to assent to tax obligations. The results also conform to earlier findings (McEwen and Maiman, 1986; Chan *et al.*, 2000) that taxpayer's perceptions of the fairness of the tax system are likely to influence their willingness to evade payment. McEwen and Maiman (1986) found evidence that the perception of fairness was directly associated with compliance. Chan *et al.* (2000) also found that taxpayer attitude (fairness) had a positive relationship with tax compliance:

(2) Positive perceptions of tax administration increase when VA, TTS and GEF improve. These therefore are the perceived grounds for tax non-compliance or compliance behaviors relevant to developing countries like Uganda.

GEF in the context of this paper is shown in Table I and Figure 5 as one tax administration indicator providing a summary of perceived tax administration, depending on effectiveness in debt management and development programmes and efficient public management financial management system. Similarly, VA also determines tax effort to a significant extent. The results of this study show that a more encompassing and legitimate state is an essential precondition for a more adequate tax administration system in Uganda. If taxpayers perceive that their interests (preferences) are properly represented in political institutions (e.g. citizens have trust in parliament) having a meaningful "voice" in influencing the state, their positive perception of tax compliance increases. Thus for Uganda to implement a better tax administration system – so that citizens get what they want – it must encourage a better VA system that transmutes citizen preferences into policy decisions as efficiently as possible. Researchers relying on economics-of-crime methodology indicate that coercive tax administration methods of tax collection can improve tax compliance. While coercive methods have been found to yield higher taxes per capita, the need for coercion also reflects higher levels of distrust in the governmental system and dissatisfaction with service delivery. The results of this study suggest that this is the case. When a government becomes effective (e.g. in form of adaption of efficient public financial management systems), its tax system is transparent (e.g. in terms of reducing taxpayers' uncertainity) and allows taxpayers to voice and require accountability (e.g. in the form of respecting human rights) (Bird *et al.*, 2007), the citizens' rationalizations for non-tax compliance are thwarted. This study provides support for Frey and Torgler (2007) who found evidence that conditional cooperation in form of VA and GEF were some of the factors for tax morale. Perceived responsiveness of state institutions is likely an essential prerequisite for a more adequate level of tax effort in developing countries

(Bird *et al.*, 2007). In a country like Uganda where the propensity to pay tax is highly crowded out (Sanya and Mulondo, 2015) emphasis should be on the elimination of rationalizations of tax avoidance and evasion:

(3) Perceptions of tax compliance increase when perceptions of the WDPE, level of taxation and ITS improve. Therefore, these are perceived tax compliance factors relevant for developing countries like Uganda.

Previous researchers who have emphasized the role of perceptions of justice and fairness, and finding that taxpayers are less likely to be complaint with a tax system they consider unjust, unfair, and thus illegitimate (Wenzel, 2002) find support by this study. This study shows that the model of indicator variables for tax compliance factors (Figure 3) eliminates the thinking that a tax system is unjust, unfair and illegitimate. According to Anna *et al.* (2008), taxpayers' perception on the tax system is important because fairness of the tax system instils compliance among taxpayers.

Collectively, the three themes above are consistent with the belief that taxpayers base their attitude to payment of taxes on the economic outputs of policy makers (and this includes GEF) as perceived by them, the taxpayers (Dell'Anno, 2009); emphasis is ours. Analytical models predict that compliance decreases with an increase in the taxpayer's share in public goods financed by tax revenue when the taxpayer assumes that their behavior leaves the total supply of public goods unchanged (Cowell, 1990, 1992; Cowell and Gordon, 1988; Falkinger, 1988). Falkinger (1995) shows that the amount of tax that a person evades decreases (remains constant, increases) with perceived equity if only if the person's absolute risk aversion increases (remains constant, decreases) with perceived equity. This indicates that the effect of perceived equity on tax reporting can differ from taxpayer to taxpayer. Furthermore, the effect of the public transfer on reported income depends on the extent to which the taxpayers use the perception of equity in their tax reporting decisions (Chung, 2002). Therefore, taxpayers perceive as fair a government that safeguards their interests and consequently, tax morale increases and tax evasion decreases. This lends credence to the fairness principle of taxation. Kinsey *et al.* (1991) demonstrate that taxpayer's assessments of the fairness of their tax burdens are framed by one of the dimensions of their perceptions of the status quo as suggested by traditional equity theory: the benefits received for taxes paid (i.e. exchange equity). This is also consistent with one of Richardson's (2006) five major underlying tax fairness dimensions, exchange with government; that deals with the benefits received from government in exchange for the income taxes paid. Thus according to the results of this study, taxpayers focus on perceiving tax compliance in terms of the amount of taxes they pay relative to benefits they receive from government (Kinsey *et al.*, 1991). If government does not offer enough (tax funded) resources compared to the amount of tax one must pay, this may lead to feelings of exchange inequity (Verboon and Dijke, 2007). Taxpayers may not agree with the government's spending policies, or if they perceive that they are not obtaining a fair exchange from the government for their tax payments, then they are distressed, and report less income than taxpayers who perceive equity in their exchange with the government (Chung, 2002).

5. Concluding remarks

The purpose of this paper was to establish the relationship between perceived grounds for tax compliance or non-tax compliance and perceived tax compliance factors. As a corollary, it aimed to answer the questions of:

(1) What tax compliance factors are relevant for a developing country like Uganda?

(2) What perceived grounds for tax non-compliance or compliance behaviors are relevant for a developing country like Uganda?

(3) What is the relationship between the identified perceived grounds for tax non-compliance or compliance factors and the identified perceived tax compliance factors?

We find that perceived VA, TTS and government effectiveness define an appropriate model for Uganda's tax administration that explains variances in perceived tax compliance in Uganda defined by ITS, level of taxation and WDPE. We thus contribute to extending the basic tax effort model by establishing the extent to which VA, TTS and GEF matter in a developing country context like Uganda.

The issue of taxpayers' tax compliance has been acknowledged by authorities and researchers on numerous instances (for extensive reviews see Braithwaite, 2009; Kirchler, 2007). Much of this literature shows that both economic and psychological variables need to be considered to understand compliance (e.g. OECD, 2004). The evidence presented in this paper suggest that supporting taxpayers' voice and the demand for accountability coupled with improvements in GEF and TTS is a worthwhile endeavor in developing countries' quest for better tax compliance outcomes. For example, focusing on the manifest variables identified in this paper for GEF can deter taxpayers from certain negative behavioral and perceptional patterns that could become more difficult to change if they persist for long. This suggests additional government policy requirements beyond greater enforcement actions by the tax authorities (such as URA for the case of Uganda).

There are reasons for caution in the use of and generalization from the present results. We did not make a distinction between actual and potential taxpayers, but Plott's (1987) evidence of little difference between student and non-student responses suggests that differences in actual and potential taxpayers' responses may be immaterial. As we used convenience sampling because we could not obtain a sampling frame for actual and potential taxpayers in Uganda, the results should be interpreted with this limitation in mind. Still, it seems likely that the results can contribute to our understanding of the tax compliance puzzle from the behavioral angle. In this study setting, factors such as perceived WDPE indicate a taxpayer's compliance decision and factors such as GEF explain that decision. This paper has shown that taking tax compliance as a taxpayer's decision that is informed by perceptions, compliance, for instance, can be greater when the taxpayers perceive the governmental process of determining how tax revenues are spent is effective.

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