The Theoretical Foundations of Voluntary Tax Compliance: Ordinary Logit Regression Model Application

Agumas Alamirew Mebratu

agumas.2001@yahoo.com

Bahir Dar University, College of Business and Economics, Accounting and Finance Department
https://orcid.org/0000-0002-0007-7871

Research Article

Keywords: Compliance Costs, Government Trust, Ordinary Logit Regression, Tax Compliance Theory, Voluntary Tax Compliance, Ethiopia

Posted Date: February 26th, 2024

DOI: https://doi.org/10.21203/rs.3.rs-3980884/v1

License: © This work is licensed under a Creative Commons Attribution 4.0 International License. Read Full License

Additional Declarations: The authors declare no competing interests.
Abstract

Tax non-compliance is a persistent problem that is becoming increasingly common worldwide. The main objective of the study is to examine the factors that influence voluntary tax compliance among large taxpayers in Ethiopia, based on the theoretical foundation of tax compliance. This study used an ordinary logit regression model, a closed-ended questionnaire with 1,550 large taxpayers, and quantitative data research analysis methods. Regression analysis shows that tax compliance behavior is positively and significantly influenced by government trust, taxpayers’ tax knowledge, tax system fairness, and rewards. However, the level of tax compliance is negatively and significantly affected by compliance costs. To improve the level of voluntary tax compliance, the government and tax authorities need to be more open and responsible. They must also increase tax awareness among taxpayers through websites, seminars and media. Ultimately, they must reduce compliance costs and deliver both tangible and intangible benefits to honest taxpayers.

1. Introduction

Even if governments are interested in the idea of taxation, the potential tax revenue that countries can generate through their tax policies far exceeds the actual revenue received. In addition to factors that influence taxpayer behavior and lead to partial tax compliance, the gap between potential revenue and actual revenue is also due to incomplete and ineffective tax administration (Lois et al., 2019 & Mebratu et al., 2020).

Tax non-compliance is a persistent problem that is becoming increasingly common worldwide (Kefela and Ghirmai, 2009). Ethiopia is one of the sub-Saharan African countries grappling with issues related to widespread tax evasion and evasion, threatening the national tax base of most of these countries. According to Shallo (2018), many factors, including non-compliance with tax regulations, are the cause of low tax collection. Non-compliance with tax regulations generates significant revenue for the Ethiopian government, as many taxpayers do not meet their tax obligations and are prosecuted for not paying taxes on time. The country’s tax system relies heavily on law enforcement as a remedy to ensure smooth operations, despite government incentives for voluntary compliance (Shallo, 2018).

Tax compliance refers to the willingness of taxpayers to comply with tax laws in order to achieve economic balance in a country. It is the process and procedure of convincing taxpayers to comply with relevant tax laws (Oladipo et al., 2022). On the other hand, tax non-compliance poses a major challenge for many tax authorities, and convincing taxpayers to comply is not easy (James & Alley, 2002). According to the economic deterrence model, taxpayer behavior is influenced by the tax rate, which determines the benefits of tax avoidance, and by the likelihood of detection and penalty for fraud, which determines the costs of tax avoidance fee (Allingham & Sandmo, 1972). Another compliance theory, the financial exchange theory, suggests that the presence of incentives can promote compliance and that governments can increase compliance by providing products that people prefer a more effective and accessible way (Cowell & Gordon, 1988). The third type of compliance theory, “social influence,” posits
that individuals' compliance behavior and attitudes toward the tax system are influenced by the behavior and social norms of the individual's reference group (Snavely, 1990). Comparative treatment theory emphasizes that the fairness and reasonableness of the tax system affects tax compliance behavior (Walsh, 2012). The political accountability model states that tax compliance depends on the degree to which citizens trust their government (Kirchler et al., 2008b). The theory of planned behavior also suggests that perceived behavioral control depends on beliefs (related to attitudes toward the behavior and subjective norms); that is, controlling beliefs (perceptions about the acquisition of skills, resources, and opportunities (Saad, 2011).

To support the government's tax policy, a country's tax system endeavors to collect taxes in an orderly and professional manner. While recent experiences indicate notable progress in certain regions of the world, tax administrations encounter challenges in achieving this goal. Taxpayer non-compliance is the main cause of developing countries' difficulties in collecting tax revenues efficiently (Okpeyo et al., 2019b). Tax evasion and tax avoidance are characteristics of tax violations defined as the inability to file tax returns, report income, accurately calculate deductions, and make timely payments (Jenkins & Forlemu, 1993). Both tax avoidance and tax evasion pose substantial economic challenges to a nation. For example, tax avoidance can lead to investment distortions, leading in to individuals and companies to undervalue their assets or even exempting part of them from taxation. On the other hand, tax evasion can destroy business morals and ethics as people look for loopholes in the system, which can lead to companies reporting higher dividends and increasing take-home profits (Dalu, et al., 2012). This would therefore have an adverse impact on the economy and lead to national inflation. One measure that the government or tax authorities take to reduce the rate of tax evasion and tax compliance is to increase the level of voluntary or forced tax compliance for taxpayers.

Although several studies have been conducted on the factors influencing tax compliance behavior, they have found different results for the same variables. For instance, (Jemberie ,2020, Engida and Baisa ,2014, Assfaw and Sebhat, 2019, and Deyganto, 2018b), concluded that fairness and justice do not have a significant impact on tax compliance behavior. Ademe & Simret (2020) found that fairness and justice or equity and fairness in the tax system have a significant impact on tax compliance behavior. The researchers mentioned above also found differences in their results when it came to the other variable, tax knowledge. For example, Assfaw and Sebhat (2019), Jemberie (2020), and Deyganto (2018b)) identified that tax knowledge significantly influences tax compliance behavior. Tax compliance and tax knowledge are unrelated, according to the conclusions of Ademe and Simret (2020), who found that tax compliance behavior is not influenced by tax knowledge. Given these inconsistent results, why additional research based on different tax compliance theories is needed. This paper is structured as theoretical foundations of tax compliance behavior and hypothesis development, research materials, results & conclusions.

2. Theoretical foundations of tax compliance behavior and hypothesis development
A variety of factors can influence taxpayers’ attitudes toward tax compliance, subsequently affecting their tax compliance behavior cultural components and other socio-cultural factors; these potential predictors of tax compliance and noncompliance vary across countries (Okpeyo, Musah, & Gakpetor, 2019a). Taking this analysis further, Barbuta-Misu (2011) classified the determinants of tax compliance into three non-economic and seven economic categories. The amount of actual income, tax rate, fines, penalties, tax benefits and the likelihood of a tax audit were considered the seven economic determinants of tax compliance. Non-economic factors include one’s view of the fairness of the tax system, one’s attitude towards taxes, and national, social and personal norms. However, Palil and Mustapha (2011) argued that the legal system, ethics and other contextual factors influence tax design to some extent.

I. Fiscal exchange theory

According to fiscal exchange theory, governments can improve compliance by providing and spending money on preferred products to citizens in more effective and accessible ways (Cowell and Gordon, 1988). Research by Alm et al. (1992) shows that perceptions of the availability of public goods and services are positively correlated with compliance. Therefore, taxpayers are primarily concerned with what they actually receive in return for paying taxes in the form of public services, i.e. the consideration. This perspective views taxes and the provision of public goods and services as a kind of contract between the government and the people who pay them. People may value the products and services provided by the government and pay taxes because they understand that their contributions are necessary both to finance those products and services and to encourage others to do the same (Fjeldstad & Semboja, 2001). Consequently, positive returns could increase the likelihood of voluntary compliance and without direct coercion. It follows that a taxpayer’s behavior might depend on how satisfied or dissatisfied he is with the terms of his contract with the government. Therefore, if taxpayers believe that the tax system is unfair, they may attempt to change their terms of trade with the government through tax evasion (Helhel & Ahmed, 2014).

Beyond threats, punishments, and detention, incentives are specific actions taken by the government to increase an individual’s compliance with the law. In addition to monetary benefits, positive incentives can also promote qualities such as satisfaction, dignity, sincerity, recognition or identification with others, and a sense of justice or stability (Smith and Stalans, 1991). A specific aspect of tax legislation, known as tax incentive, aims to reward or encourage certain compliant behavior among taxpayers. From this the first hypothesis can be developed:

\[ H1: \text{Reward and incentive have positive and significant effect on tax compliance behavior.} \]

II. Social influences- Comparative Treatment Theory

As per the social influence theory, an individual’s compliance behavior and attitudes toward the tax system are believed to be influenced by the social norms and behavior of their reference group (Snavely, 1990). As with other aspects of behavior, taxes can also be assumed to have an influence on human behavior. According to Helm and Ahmed (2014), a person’s reference group, which includes friends,
neighbors and family, can influence their compliance behavior and attitude towards the tax system. Thus, knowing that several members of significant groups in one's life are tax evaders weakens a taxpayer's commitment to compliance. In addition, people with social connections may be discouraged from committing fraud because they fear the consequences if their cover-up is exposed and made public. Furthermore, Sah (1991), argues that social influences can affect compliance by, among other things, altering the perceived likelihood of detection.

With its foundation in equity theory, the comparative treatment model suggests that better compliance could come from eliminating imbalances in the exchange relationship between taxpayers and government (McCarthy and Evans, 2009). The relationship between the state and its citizens cannot be viewed in a vacuum involving only both parties. As per Fjeldstad et al. (2012) they could also think about their own relationship with the state before thinking about their fellow citizens. Perceptions of how the government treats them compared to other can significantly influence their views on both their peers and the government. If a group is granted preferential treatment by the state, this could affect both the group receiving benefits and the citizen's relationship with the state. Consequently, the state's treatment of an individual in relation to other members of its larger national community is as important as what the individual receives from the state. The way each individual taxpayer is treated and the relationship between others' tax burdens and compliance behavior are just two of the ways the perceived fairness of the tax system influences compliance decisions. According to Walsh (2012) people are more likely to comply if they believe that others around them also pay taxes.

Treating equal people matched under equal circumstances is the most understandable requirement of fairness (Jayawardane, 2015). Horizontal and vertical equity are the two main elements of tax equity, which is justice, also known as tax equity. While vertical equity suggests that taxpayers who are better off should contribute the same percentage of their income as those who are less well off, horizontal equity supports collecting taxes based on financial situation (Sahu, 2021). Individuals with different income levels are characterized by vertical equity (Barjoyai, 1987). This allows the second hypothesis to be formulated:

**H2: Fairness in the tax system has significant and positive effect on tax compliance behavior.**

### III. Political legitimacy theory

Political legitimacy theory suggests that citizens' trust in their government affects tax compliance (Kirchler et al., 2008b). Political scientists have studied the processes that lead to political legitimacy and civic identification. Legitimacy can be defined as the belief or trust that the government, institutions and social arrangements are appropriate, just and fair and serve the interests of the general public (Fjeldstad et al., 2012). In order for taxpayers to pay their taxes willingly, trust is crucial (Scholz & Lubell, 1998). Controlled expectations and trust in an uncertain environment are related to the relationship between the government and those in power (Sitardja & Dwimulyani, 2016). When taxpayers who have less trust in the government view events negatively, while taxpayers who have more trust view events positively (Robinson, 1996). Taxpayers who lack trust in the government are likely to be more skeptical about the
use of tax revenue collected by the government. If taxpayers see the government in a positive light, they will support its tax reform. Taxpayers' commitment to the tax system and payment of taxes is increased when they have trust in the government (Jimenez and Iyer, 2016b). They also behave differently towards taxes. From this the third hypothesis can be developed:

H3: Perception of government trust has positive and significant effect on tax compliance behavior.

IV. Theory of planned behavior

An influential theory in social psychology that aims to explain people's behavior is the theory of planned behavior (Bobek and Hatfield, 2003). The theory of rational action that Icek Ajzen and Fishbein (1970) proposed to explain conscious behavior was refined into this theory developed by Icek Ajzen (1991). This idea assumes that certain elements, starting methodically and evolving for various reasons, have an impact on the behavior of people in society. However, a person's ability to perform a particular behavior depends on their motivation to do so. The three elements of subjective norms, behavioral attitudes, and cognitive behavioral control define the purpose of behavior (Bobek & Hatfield, 2003). In addition, behavioral, normative and control beliefs influence the factors listed above (Icek Ajzen, 2002). According to Saad (2011), the theory of planned behavior also suggests that beliefs—that is, control beliefs—are a necessary prerequisite for perceived behavioral control, as well as for attitudes toward behavior and subjective standards. As stated by Mathieson (1991), control beliefs are the recognition of the acquisition of opportunities, resources and capabilities and the understanding of the importance of these resources in achieving objectives. A person's ability to control their behavior depends heavily on their skills, expertise, and social support.

One of the factors affecting tax compliance the taxpayers' ability to understand tax laws and their willingness to comply with them. Tax knowledge refers to the general level of tax knowledge, knowledge of avoidance options, a general educational qualification or knowledge of tax law (Bornman and Ramutumbu, 2019). A taxpayer's knowledge of their rights, obligations and tax payment procedures, as well as the consequences of non-compliance, is acquired through tax education (Machogu & Amayi, 2016). The authors suggest that taxpayer education can promote a positive attitude toward tax compliance and provide the necessary tax knowledge to comply with tax laws. This leads to the formulation of the fourth hypothesis:

H4: Taxpayers' tax knowledge has significant and positive effect on tax compliance behavior.

V. Economic Deterrence Theory

According to the study of Allingham and Sandmo (1972), the economic deterrence model assumes that a variety of factors, including tax rates, the benefits of tax evasion, the likelihood of fraud being detected, and the severity of the penalties for doing so, can influence taxpayers' behavior. Therefore, it is about making rational decisions amidst of uncertainty, where tax evasion can lead to tax savings or face penalties (Fjeldstad et al., 2012). As a result, the more likely tax evasion is to be discovered and punished
more severely, the fewer people will do it. Conversely, in situations where the likelihood of audits is low and fines are minimal, the expected return from evasion is high. According to Helhel and Ahmed (2014), the model then predicts significant non-compliance. In certain situations, fear of being discovered or caught can serve as an effective deterrent to encourage honest behavior. For example, fear of being caught has been found to be an effective strategy for eliciting truthful behavior, although there is criticism that the model only considers the coercive side of compliance at the expense of consensus. Tax administrations, influenced by the concepts of economic deterrence, have developed enforcement strategies that primarily focus on penalties and the fear of detection, not to mention the associated time and financial cost, including the burden of the tax payment itself.

The economic costs of taxes include not only the actual tax payment and the associated additional burden, but also the time and money spent on tax compliance and tax planning (Blauhus et al. 2011). Your legal and regulatory obligations from tax authorities and tax laws are referred to as compliance costs. Both the actual tax payment and any costs related to tax distortions are not included in these expenses (Eragbhe and Modugu, 2014). The compliance costs would disappear if the tax were collected. In addition to the costs incurred in obtaining and maintaining the knowledge required for this position, such as understanding legal responsibilities and penalties, this also includes the costs of collecting, disclosing and filing taxes on the company's products and income and on the wages and salaries of its employees. Eragbhe and Modugu (2014) divide compliance costs into two categories: tax planning and calculation costs. To maintain an accurate accounting system, the costs associated with data collection and tax liability calculations are called computational costs. However, when taxpayers attempt to legally reduce or avoid taxes, planning costs arise. This understanding leads to the fifth hypothesis:

\[ H5: \text{Compliance cost has negative and significant effect on tax compliance behavior.} \]

3. Research materials and model specification

The relationship between independent and dependent variables was examined in this study using a quantitative research approach. The target group of the study was 1,550 large Ethiopian taxpayers. The primary data collected consisted of questionnaires with five Likert scales adjusted to range from “strongly agree” (SA) = 5 to “strongly disagree” (SD) = 1. The questionnaires were adopted from the works of Nandal, Diksha and Jaggarwal (2021), Sapiei and Abdullah (2008) and Augustine and Enyi (2020).

Model specification: Ordinary logit regression model

The characteristics of the dependent variable typically determine which model is appropriate. The dependent variable in the study determines the voluntary tax compliance of Ethiopian taxpayers and is categorical or ordered. Consequently, the ordered logit model was used to examine the factors influencing voluntary tax compliance behavior, which according to Palil et al. (2013) is divided into low, medium and high compliance. According to Torres-Reyna (2012) an ordinary logit regression model is used when a dependent variable includes three or more categories and the values of each category are arranged in a meaningful order. The proportional odds model (POM) is the most commonly used model for ordinal
logistic regression (Fuks and Salazar, 2008). To achieve the desired results, the researchers reviewed the variables used in various studies mentioned in the literature review and developed the model as follows.

\[
\ln Y_i^* = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_k X_k + \epsilon_i
\]

\[
\ln \frac{\text{probability of event}}{1 - \text{probability of event}} = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_k X_k + \epsilon_i
\]

\[
\ln \frac{\text{probability of event}}{1 - \text{probability of event}}
\]

is called logit. It is the log of the odds that an event occurs. The odds that an event occurs are the ratio of the number of categories which happened over not occurs categories.

Where \( Y_i^* \) is latent outcome variable measure of taxpayers;

\( X_1, X_2, X_3, \ldots, X_i \) are vectors of independent variables of ith case;

\( \beta_0 \), threshold values;

\( \beta_1, \beta_2, \ldots, \beta_k \) are parameter vectors to be estimated (regression coefficients);

\( \epsilon_i \) is a random error term; \( k \) is the number of regression coefficients.

The dependent variable, tax compliance level (\( Y_i^* \)), is determined by averaging the scores of the four items: timely filing of tax returns, timely reporting of all income, satisfaction with tax payment, payment of taxes without enforcement, and the overall taxpayer score (which ranged from 1 = strongly disagree to 5 = strongly agree). The following formula was used to calculate the probability of each tax compliance level (low-\( y_1 \), medium-\( y_2 \), and high-\( y_3 \)).

\( y = 1 \) if \( y_i^* \leq \mu_1 \)

\( y = 2 \) if \( \mu < y_i^* \leq \mu_2 \)

\( y = 3 \) if \( y_i^* > \mu_2 \)

To estimate the tax compliance level, \( \mu \) is a set of thresholds that can be determined using the parameter vector of \( \beta \)s, and \( y \) is an observable variable that represents different tax compliance levels of the taxpayer. The following model, which estimates the parameters of the study, was developed using the general equation mentioned above.

\[ TPVC = \beta_0 + \beta_1 RI + \beta_2 FTS + \beta_3 PGT + \beta_4 TPTK + \beta_5 CC + \epsilon \]

Where: \( TPVC = \) Tax Payers Voluntary Compliance;

\( \beta_0 = \) Constant (\( Y \) intercept);
$\beta_1, \beta_2, \beta_3, \beta_4$ and $\beta_5$ = Coefficient of the independent variables

$RI$ = Reward and Incentives

$FTS$ = Fairness of Tax System

$PGT$ = Perception of Government Trust

$TPTK$ = Tax Payers Tax Knowledge

$CC$ = Compliance Cost

$\epsilon$ = Error term;

## 4. Results & Discussion

### a. Spearman’s rho correlation test

According to Gogtay and Thatte (2017), a correlation coefficient is a single value or number that shows a relationship between the two variables under study. A nonparametric (parametric) rank statistic that has been proposed to measure the degree of correlation between two variables is the Spearman rank correlation coefficient (Hauke & Kossowski, 2011). The Spearman chi-square test is used due to the ordinal and non-lean nature of the dependent variable, tax compliance. Using SPSS version 28 software, the correlation coefficient of the variables included in the study was determined using Spearman’s Rho test, as shown in the following table.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Spearman’s rho Correlation Coefficient</th>
<th>Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perception of government trust * Tax Payers Voluntary Compliance</td>
<td>.311</td>
<td>.000</td>
</tr>
<tr>
<td>Tax payers tax knowledge * Tax Payers Voluntary Compliance</td>
<td>.232</td>
<td>.000</td>
</tr>
<tr>
<td>Fairness of Tax System * Tax Payers Voluntary Compliance</td>
<td>.371</td>
<td>.000</td>
</tr>
<tr>
<td>Compliance cost* Tax Payers Voluntary Compliance</td>
<td>-.381</td>
<td>.000</td>
</tr>
<tr>
<td>Reward and Incentives * Tax Payers Voluntary Compliance</td>
<td>.376</td>
<td>.000</td>
</tr>
</tbody>
</table>

(Source: Author’s own computation SPSS output, 2023)
Table 1 shows that there is a positive and significant relationship between large taxpayers’ voluntary compliance in Ethiopia and independent perceptions of government trust, taxpayers’ tax knowledge, tax system fairness, rewards and incentives. Conversely, the value of the Spearman correlation coefficient indicated a significant negative relationship between compliance behavior and compliance costs.

**b. Ordered logistic regression parameter estimates**

The log likelihood ratio is used in ordinal logistic regression to interpret the coefficient. The probability that the perceived values of the independent and dependent variables are similar is called the log likelihood. This probability function is crucial for calculating the probability of data observation given unknown parameters (α and β). Like other probabilities, the probability ranges from 0 to 1. Since it is a logarithmic function, the log likelihood function is easier to use. The log likelihood method is used to compare the different models.
Table 2
Parameter Estimates.

<table>
<thead>
<tr>
<th></th>
<th>Estimate ( )</th>
<th>Sig.</th>
<th>95% Confidence Interval</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Lower Bound</td>
</tr>
<tr>
<td><strong>Threshold</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[TPVC = 1]</td>
<td>3.04</td>
<td>.00</td>
<td>1.20</td>
</tr>
<tr>
<td>[TPVC = 2]</td>
<td>5.93</td>
<td>.000</td>
<td>3.91</td>
</tr>
<tr>
<td><strong>Location</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[PGT = 1]</td>
<td>1.53</td>
<td>.008</td>
<td>.55</td>
</tr>
<tr>
<td>[PGT = 2]</td>
<td>1.81</td>
<td>.001</td>
<td>.54</td>
</tr>
<tr>
<td>[PGT = 3]</td>
<td>1.03</td>
<td>.023</td>
<td>.12</td>
</tr>
<tr>
<td>[PGT = 4]</td>
<td>.60</td>
<td>.488</td>
<td>−.51</td>
</tr>
<tr>
<td>[TPTK = 1]</td>
<td>1.80</td>
<td>.000</td>
<td>.64</td>
</tr>
<tr>
<td>[TPTK = 2]</td>
<td>1.90</td>
<td>.000</td>
<td>.84</td>
</tr>
<tr>
<td>[TPTK = 3]</td>
<td>3.00</td>
<td>.000</td>
<td>1.10</td>
</tr>
<tr>
<td>[TPTK = 4]</td>
<td>1.10</td>
<td>.076</td>
<td>−.20</td>
</tr>
<tr>
<td>[FTS = 1]</td>
<td>1.70</td>
<td>.011</td>
<td>.24</td>
</tr>
<tr>
<td>[FTS = 2]</td>
<td>1.40</td>
<td>.031</td>
<td>.19</td>
</tr>
<tr>
<td>[FTS = 3]</td>
<td>1.40</td>
<td>.011</td>
<td>.20</td>
</tr>
<tr>
<td>[FTS = 4]</td>
<td>1.10</td>
<td>.083</td>
<td>−.21</td>
</tr>
<tr>
<td>[CC = 1]</td>
<td>−2.21</td>
<td>.000</td>
<td>−3.20</td>
</tr>
<tr>
<td>[CC = 2]</td>
<td>−1.20</td>
<td>.000</td>
<td>−2.40</td>
</tr>
<tr>
<td>[CC = 3]</td>
<td>−1.11</td>
<td>.021</td>
<td>−1.99</td>
</tr>
<tr>
<td>[CC = 4]</td>
<td>−.90</td>
<td>.065</td>
<td>−1.75</td>
</tr>
<tr>
<td><strong>RI</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>[RI = 1]</td>
<td>2.70</td>
<td>.000</td>
<td>1.65</td>
</tr>
<tr>
<td>[RI = 2]</td>
<td>2.70</td>
<td>.000</td>
<td>1.70</td>
</tr>
<tr>
<td>[RI = 3]</td>
<td>2.12</td>
<td>.000</td>
<td>1.10</td>
</tr>
<tr>
<td>[RI = 4]</td>
<td>1.25</td>
<td>.025</td>
<td>.03</td>
</tr>
</tbody>
</table>

(Source: Author’s own computation SPSS output, 2023)

The parameter estimate coefficient in Table 2 was used in this study to identify the influence of factor variables (perceptions of government trust, taxpayers’ tax knowledge, tax system fairness, compliance costs & rewards and incentives) with the outcomes variable (tax payers voluntary tax compliance)
behavior). The results indicate that for large taxpayers in Ethiopia, perception of trust in government, taxpayer’s tax knowledge, perceptions of fairness of the tax system & rewards and incentives have a positive and significant influence on voluntary tax compliance. On the other hand, compliance cost has negative and significant effect on voluntary tax compliance.

From parameter estimate Table 3 the following logit equations were developed for significant variable categories. 1 = low level of voluntary tax compliance behavior and 2 = medium level of voluntary tax compliance behavior which are cut points or thresholds. When the response variable is categorized according to its order of magnitude, ordinal/ordered logistic regression should be used (Nwakuya & Mmaduka, 2019). The proportional odds model is the most widely used model in ordinal logistics regressions. The exponential estimate $B$ can be used to determine the relation of the factor variables to dependent variable.
Table 3
Odds ratio (Exp(B)).

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Exp(B)</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Threshold [compliance level = 1]</td>
<td>9.01</td>
<td>.004</td>
</tr>
<tr>
<td>[compliance level = 2]</td>
<td>219.02</td>
<td>.000</td>
</tr>
<tr>
<td>[Perception of Government trust = 1]</td>
<td>7.03</td>
<td>.007</td>
</tr>
<tr>
<td>[Perception of Government trust = 2]</td>
<td>3.98</td>
<td>.001</td>
</tr>
<tr>
<td>[Perception of Government trust = 3]</td>
<td>3.11</td>
<td>.023</td>
</tr>
<tr>
<td>[Perception of Government trust = 4]</td>
<td>1.61</td>
<td>.400</td>
</tr>
<tr>
<td>[Tax payers Tax knowledge = 1]</td>
<td>5.76</td>
<td>.001</td>
</tr>
<tr>
<td>[Tax payers Tax knowledge = 2]</td>
<td>6.70</td>
<td>.000</td>
</tr>
<tr>
<td>[Tax payers Tax knowledge = 3]</td>
<td>7.01</td>
<td>.000</td>
</tr>
<tr>
<td>[Tax payers Tax knowledge = 4]</td>
<td>3.11</td>
<td>.091</td>
</tr>
<tr>
<td>[Fairness of tax system = 1]</td>
<td>5.20</td>
<td>.011</td>
</tr>
<tr>
<td>[Fairness of tax system = 2]</td>
<td>4.00</td>
<td>.013</td>
</tr>
<tr>
<td>[Fairness of tax system = 3]</td>
<td>3.90</td>
<td>.011</td>
</tr>
<tr>
<td>[Fairness of tax system = 4]</td>
<td>2.79</td>
<td>.044</td>
</tr>
<tr>
<td>[Compliance cost = 1]</td>
<td>-.117</td>
<td>.000</td>
</tr>
<tr>
<td>[Compliance cost = 2]</td>
<td>-.238</td>
<td>.002</td>
</tr>
<tr>
<td>[Compliance cost = 3]</td>
<td>-.340</td>
<td>.019</td>
</tr>
<tr>
<td>[Compliance cost = 4]</td>
<td>-.443</td>
<td>.085</td>
</tr>
<tr>
<td>[Reward&amp; incentive = 1]</td>
<td>4.407</td>
<td>.000</td>
</tr>
<tr>
<td>[Reward&amp; incentive = 2]</td>
<td>3.471</td>
<td>.000</td>
</tr>
<tr>
<td>[Reward&amp; incentive = 3]</td>
<td>7.907</td>
<td>.000</td>
</tr>
<tr>
<td>[Reward&amp; incentive = 4]</td>
<td>3.211</td>
<td>.045</td>
</tr>
</tbody>
</table>

(Source: Author’s own computation SPSS output, 2023)

Independent variables whose corresponding odds ratio or Exp(B) are significantly greater than 1.0 have significant positive effects on the response variable in the model. However, variables whose odds ratio
(exponential beta value) significantly less than 1.0 have a negative effect on the response or dependent variable (Liu, 2009).

**Reward and incentives**

*H1: Reward and incentive have positive and significant effect on tax compliance behavior.*

As indicated in Table 3 above, the value of odds ratio for taxpayers responded strongly agree or tax payers believed reward increase compliance rather than punishment, reward create goodwill for the business, being rewarded confirm love of the country, tax deduction as reward incite tax compliance and the betterment of current reward system in Ethiopia. It is therefore better to say reward and incentive has positive and significant effect on tax compliance behavior. This confirms that fiscal exchange theory of taxpayer’s compliance is primarily concerned with what they actually receive in return for paying taxes in the form of public services. This perspective views taxes and the provision of public goods and services as a kind of contract between the government and the people who pay them. In addition to monetary benefits, positive incentives can also promote qualities such as satisfaction, dignity, sincerity, recognition or identification with others, and a sense of justice or stability (Smith and Stalans, 1991).

**Fairness in the tax system**

*H2: Fairness in the tax system has positive and significant effect on voluntary tax compliance behavior.*

The odds ratio for fairness of the tax system is shown in Table 3 and suggests that, all other factors held constant, taxpayers who believed the current tax system was very fair were more likely to have high levels of voluntary compliance than taxpayers who did not believe in the fairness of the tax system. In general, the higher odds ratio for fairness suggests that there is a positive and significant relationship between tax system fairness and voluntary tax compliance behavior in this study. It implies that a fair tax system - one in which the tax office treats all taxpayers equally, provides services based on the amount of tax collected, and treats taxpayers with the same income level to pay the same tax - will result in taxpayers voluntarily comply an unfair tax system encourages taxpayers to evade taxes and avoid paying taxes. Consequently, the state’s treatment of an individual in relation to other members of its larger national community is as important as what the individual receives from the state. The way each individual taxpayer is treated and the relationship between others’ tax burdens and compliance behavior are just two of the ways the perceived fairness of the tax system influences compliance decisions. According to Walsh (2012), people are more likely to comply if they believe that others around them also pay taxes which proofs social influences- comparative treatment theory has effect on tax payer’s voluntary compliance.

**Perception of Government trust**

*H3: Perception of government trust has positive and significant effect on tax compliance behavior.*
Table 3 indicates that Ethiopia's voluntary tax compliance behavior is positively and significantly influenced by government trust. Taxpayers who trust their government are more likely to comply than those who do not, according to the overall value of the quota ratio. In other words, taxpayers in Ethiopia who have higher trust in the government are more likely to comply with voluntary tax laws. Conversely, taxpayers with lower perceptions are less inclined to comply with voluntary tax laws which is in line with what the political legitimacy theory suggests that citizens' trust in their government affects tax compliance (Kirchler et al., 2008b). Taxpayers' commitment to the tax system and payment of taxes is increased when they have trust in the government (Jimenez and Iyer, 2016b) which is in line with political legitimacy theory.

**Tax payers Tax knowledge**

**H4: Tax payers Tax knowledge has significant and positive effect on tax compliance behavior.**

The odds ratio value of tax knowledge in each category was greater than one as shown in Table 3, clearly demonstrate that tax compliance is positively and significantly influenced by tax knowledge. This suggests that taxpayers who have received tax training and have in-depth tax knowledge, such as the type of income reported on tax returns and the proportion of expenses retained for tax purposes on the annual income return, are more compliant are taxpayers who have not received any training and have in-depth knowledge of tax or payment processes. A taxpayer's knowledge of his or her rights, obligations and tax payment procedures, as well as the consequences of non-compliance, is acquired through tax education (Machogu & Amayi, 2016). Machogu and Amayi (2016) point out that taxpayer education can promote a positive attitude toward tax compliance and provide the necessary tax knowledge to comply with tax laws which is in line with the theory of planed behavior.

**Compliance Cost**

**H5: Compliance cost has negative and significant effect on tax compliance behavior.**

Table 3 clearly illustrates the odds ratio for compliance costs that have a statistically significant and negative impact on the voluntary tax compliance behavior of Ethiopian taxpayers. Thus, taxpayers who reported that they strongly agreed with compliance costs were less likely to achieve high voluntary compliance than taxpayers who reported that they strongly disagreed, all other variables remaining the same. According to the odd ratio value tax payers in Ethiopian who responded strongly agree, agree and neutral in compliance cost (cash register mashie price is high, time spent to organize tax and related documents also high, additional payment for accountants and sellers in their company is high and payment for tax advisor is high,) were less likely to demonstrate high levels of voluntary compliance compared to those who strongly disagree. As a result, the more likely tax evasion is to be discovered and punished more severely, the fewer people will do it. Conversely, in situations where the likelihood of audits is low and fines are minimal, the expected return from evasion is high. As indicated by Helhel and Ahmed (2014) the model then predicts significant non-compliance which is stated under economic deterrence theory.
5. Conclusion & policy implication

Paying taxes does not come with a direct reward, but it is a mandatory payment that citizens make to the government. The level of tax compliance is determined by the willingness of taxpayers to follow tax laws, which is crucial for a nation to achieve economic stability. However, convincing taxpayers to comply with tax laws is a challenging task, and tax non-compliance remains a significant issue for many tax authorities. Tax evasion and avoidance are the primary characteristics of taxpayers’ noncompliance behavior according to different theoretical foundations. The findings revealed that all variables which have theoretical foundation (tax payers tax knowledge, perceptions of fairness on the tax system, perceptions of government trust, cost of compliance and reward) has significant effect on voluntary tax compliance levels.

In order to enhance taxpayers’ perception of government trust, the tax administration office should ensure accountability and transparency in their actions via allocation of the annual budget based on population size and other situational factors such as drought or war, and portion of tax revenue towards important and essential projects for the society. Furthermore, to enhance the level of trust in the government among taxpayers, the government should strongly combat corruption by government authorities and implement appropriate measures to address corrupt practices among tax authorities and all employees in revenue and customs offices.

Taxpayers with good knowledge about taxes are more likely to comply compared to those with no awareness about tax regulations, hence revenue authorities should focus on creating awareness among taxpayers through continuous training programs, media advertisements, workshops, and seminars. However, it is important to note that awareness should not be limited to providing tax knowledge alone. It should also involve consultation meetings and discussions with influential individuals such as religious leaders, well-known figures in society, or other persuasive individuals. This approach will help to have a broader impact on society through these influential individuals who are respected within their respective groups.

References


Journal of Arts Commerce, 4*(6), 131-141.
Sciences, 8*(3), 89.
costs: A taxpayer service approach:* Harvard Institute for International Development, Harvard 
University.
trust in government, and perceived fairness on taxpayer compliance. *Advances in accounting, 34*, 17-
26.
98-106.
32. Liu, X. (2009). Ordinal regression analysis: Fitting the proportional odds model using Stata, SAS and 
SPSS. *Journal of Modern Applied Statistical Methods, 8*(2), 30.
34. Machogu, C., & Amayi, J. B. (2016). The effect of taxpayer education on voluntary tax compliance, 
among SMEs in Mwanza City-Tanzania.
the theory of planned behavior. *information systems research, 2*(3), 173-191.
Improved taxpayer compliance: Challenges for policy makers and revenue authorities. 7, 171.
37. Mebratu Agumas A., Leyku Fentaw &Meroune L. (2020). Determinant of tax revenue effort in sub-
Development & World Policy, 9(1) 47-71.
GST structure on tax compliance: The perspectives of small and medium enterprises (SMEs). *J 
NVEO-NATURAL VOLATILES ESSENTIAL OILS Journal NVEO, 7337-7365*.
39. Nwakuya, M. T., & Mmaduka, O. (2019.) Ordered logistic regression on the mental health of 