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Determinants of Tax Compliance in Ethiopia: Case Study in Revenue and Customs Authority, Hawassa Branch

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Abstract
This study aimed to investigate determinants of tax compliance in Ethiopian Revenue and Customs Authority (ERCA) the case of Hawassa Branch. Survey conducted using primary data collected from 185 sample tax payers' and secondary data collected form published and unpublished documents. A combination of both stratified and simple random sampling techniques were used to select the sample tax payers. The study used descriptive method to assess the compliance situation and ordered logistic regression was applied to examine the main determinants of tax compliance level. The results of the study revealed that the compliance situation of the branch was low. Tax audit, strength of the tax authority and educational level, tax rate, tax compliance cost, corruption, referent group, tax payers' attitude towards tax and tax payers' awareness about the tax law were found to be statistically significant effect on tax compliance. Thus, these factors should be given due consideration to enhance tax payers' compliance behavior and improve government's revenue collection in Ethiopia.
Keywords: Tax compliance, Determinants, Ordered logistic regression, Ethiopia.

1 Introduction

Tax payment is based on taxpayer self-assessment and voluntary compliance In modern revenue administration system. Hence, the main focus of a modern revenue administration is to manage tax compliance so that delinquent behavior can be detected and prevented and at the same time to provide taxpayer service and education to enable taxpayers fulfill their tax obligation easily with least complexity and compliance burden (Joseph, 2016).

According to the GTP 1 (2010 to 2014) performance report by Ethiopian Revenue and customs Authority (ERCA), tax collection has increased from time to time. For instance, it increased from 58.98 billion Ethiopian Birr (ETB) in 2010/11 to 133.1 billion ETB in 2013/14, which is 29 % increase in each year. The tax to GDP ratio has also improved from 12.5 % in 2013/14 to 13.5 % in 2015/16. However, it still remains low compared to the tax revenue generating capacity of the economy and GTP target of tax to GDP was 15-17 %. Similarly, it is below the average performances of sub Saharan African (SSA) countries of about 20 % (IMF, 2016).

Ethiopia faces difficulties in raising revenue to the required level in order to scale up the development actions. There are many factors that contribute for the low level of tax income but the tax noncompliance is one of the main factors in this respect. According to ERCA'S (2016) annual report, non-compliance may take the substantial share on the poor revenue performance. A number of taxpayers which are important source of revenue for Ethiopian government fail to fulfill income tax requirements and a number of them face prosecution for failing to pay taxes on time. Even if the government advocates voluntary compliance, the tax system in the country mainly stresses on legal enforcement as a remedy to ensure its proper functioning.

The government of Ethiopia finances its revenue mainly from three source; namely tax, loan and donation (from internal and external source). Like any developing country government, in order to finance its expenditure have to look in to alternative choice. Even though taxes, donation and grants are presents, still the government face shortage of fund that is economic deficit. According to IMF (2016) report, the general government deficit is continuous to remain at around 3 % of GDP. Similarly tax revenue as a percentage of GDP which is a good measure of tax compliance (Carter & Cebreiro, 2011) is 13.5 % in 2015/16, also below the determined GTP target which is 15.7 %. This shows that the percentage share of tax revenue to GDP of Ethiopia is still lower both to country's target and Sub-Saharan standard.

There are some studies conducted on tax compliance in Ethiopia. Some of these are Tilahun & Yidersal (2014)examined determinants of tax compliance behavior in Ethiopia the case of Bahirdar city taxpayers. Tadesse & Goitom (2014) examined determinants of taxpayers' compliance with the tax system in Mekelle city, Ethiopia. The research conducted by Amina & Sania (2015) examined tax compliance and its determinant in the case of Jima zone Ethiopia. Another research done by Wollela & Fjeldstad (2016) examine factors that determine business people's attitudes towards paying taxes in Ethiopia. A study conducted by (Niway & Wondwossen, 2016) examined the determinants of voluntary tax compliance behavior in self-assessment system evidence from SNNPRS Ethiopia.

The factors affecting tax compliance behavior appear to vary from region to region or one business sector

from another. For instance, Tadesse & Goitom (2014) examined probability of being audit have significant impact on tax compliance in Mekelle city tax payers, Tilahun & Yidersal (2014), found Probablity of being audit have no significant impact on tax compliance behavior of Bahrdar city tax payers. A research conducted by Amina and Sania (2015) examined perception of government spending have significant impact on tax compliance in the case of Jima zone Ethiopia. A research conducted by Tadesse & Goitom (2014) examined perception of government spending have no significant impact on tax compliance in Mekelle city tax payers.

However, these studies conducted in specified area don't show tax compliance situation and its determinants specifically on corporate tax payers in ERCA Hawassa branch. Furthermore, none of these studies delivered due attention on factors such as corruption, tax compliance cost and tax collection enforcement. Taking ERCA Hawassa branch as the case study, therefore, this study aimed to investigate the determinants of tax compliance situation in the study area.

2 Methodology of the Study

2.1 Research Design

The study was used a cross-sectional survey design that used quantitative research approach. According to Creswell (2003), quantitative approach is best if the problem is identifying factors that influence an outcome, or understanding the best predictors of outcomes. This approach is also best to test a theory or explanation. Therefore, for this research quantitative research approach was used.

2.2 Data Source and Collection Methods

Both primary and secondary data were collected to assess compliance situation of the branch and examine factors that determine tax compliance. Primary data were collected from selected sample tax payers of ERCA Hawassa branch. Secondary data were collected from published and unpublished documents, office reports, books, internet, database of taxpayers registered, their distribution with respect to business type, and number of filer tax payers and non-filer tax payers.

The self-administered questionnaires were used to get detail information from sample taxpayers. The questionnaires were adopted and developed with some modification from previous similar studies, consists of mainly close- ended and a small number of open-ended questions to collect primary data from the respondents. Most of the close-ended questions are designed on an ordinal level of measurement basis, and others are designed as 'yes' or 'no' questions, so that the variables can be ranked to measure the degree of their strength or the agreement or the disagreement of the respondents. Adding open ended questions allows respondents to offer an answer that we does not include in the questions.

Secondary data was collected from ERCA Hawassa branch data base and the last five year (2011/12-2015/16) annual performance report of the branch (unpublished source); and other compliance related issues and concepts also collected from ERCA head office, tax journals, as well as articles published in the media. While collecting and using these data for the study, more considerations were given to their time period, reliability, and relevance to the purpose of the study.

2.3 Sampling Technique and Sample Size Determination

Both stratified and simple random sampling techniques were involved for this study. The strata were formed on the basis of business sectors; tax payers that incorporated in agricultural sectors first stratum, manufacturing sector second stratum, service sector third stratum and others(wholesale trade, retailer, mining and other) fourth stratum. They were also established based on our experience and the availability of data.

Population of the study is corporate taxpayers registered in ERCA Hawasa branch offices. Target total population for this study as of January 2017 was 1906 and classified by their business sectors; agriculture, service, manufacturing, and others (wholesale trade, retail, mining and so on) (ERCA Hawassa branch data base, 2017). The sample size was determined according to Yemane (1967) simplified formula cited in Singh & Masuku (2014).

$$n = \frac{N}{[1 + N(e)2]}$$

n= is sample size
N= is population size
e= is level of precision (applied a 93 % confidence level and a 7 % precision level)

$$n = \frac{1906}{[1+1906\,(0.07)2]} = 185$$

n = 185

The study followed the method of proportional allocation under which the sizes of the samples from the different

strata are kept proportional to the sizes of the strata. That is, if P_i represents the proportion of population included in stratum ***i***, and ***n*** represents the total sample size, the number of elements selected from stratum ***i*** is $n.P_i$. Respondents are selected by simple random sampling from each stratum. For this study a sample size of n is185 to be drawn from a population of size N is 1906 which is divided into four strata of Agricultural sector is 283, Manufacturing sector is 100, Service sector is 1058 and Others (wholesale trade, retailer mining and so on) is 465.

The sample size for Agricultural sector =283, n_1=185(283/1906) =27
The sample size for Manufacturing sector =100, n_2=185(100/1906) =10.
The sample size for Service sector = 1058, n_3=185(1058/1906) =103.
The sample size for Others = 465, n_3=185(465/1906) =45.

Table 1: Sample size distribution of tax payers

Business sector	Number of Tax payers	Sample size	Percent (%)
Agricultural sector	283	27	14.59
Manufacturing sector	100	10	5.41
Service sector	1058	103	55.68
Others	465	45	24.32
Total	1906	185	100

Source: Own calculation from ERCA Hawassa branch data base, 2017

2.4 Method of Data Analysis and Model Specification Procedures

In order to analyze the data both descriptive and econometric methods were used. The descriptive statistics constituted frequencies, %ages and averages. Econometric analysis was applied to examine the determinants of tax compliance. In addition, we have checked the validity of estimators by making diagnostic test for hetroskedasticity and multicollinearity. Moreover, SPSS version 20 and STATA version 12 were applied for statistical computation of the data.

According to Ali et al. (2014), by asking more direct questions, obtaining reliable quantitative information about tax compliance attitude is practically impossible. Similar studies also show that individuals tend to answer untruthfully when asked more direct questions about such issues. Tax compliance is therefore likely to be over - reported in survey data using such measures.

For this study we used similar approach used by Taddese and Goitom (2014) to measure tax payer compliant behavior. By asking five different questions, specifically; their intention to evade paying tax, their general feeling about fairness of the tax system, their acceptability to pay tax, their feeling about tax system discourage economic activities and finally how many people they know who are noncompliant. The average score of the five questions have taken as an index for tax compliance. Based on this score, taxpayers were categorized into three levels of compliance: low compliant (c_i=1), medium compliant (c_i =2), and high compliant (c_i = 3).

An ordered response model can only be applied if there exists a logical ordering of the alternatives. The reason is that there is assumed to exist one underlying latent variable that drives the choice between the alternatives. In other words, the results will be sensitive to the ordering of the alternatives, so this ordering should make sense. To estimate relationships between an ordinal dependent variable and a set of independent variables ordered logit models are used (Verbeek, 2004). Commonly chosen models are logit model and probit (or normit) model. Because of its mathematical convenience, given the scaled ranking information of the dependent variable (tax compliance), ordered logistic estimation is applied. The ordered logistic have the following form: $c_i^* = \alpha + \beta_1 X_{1i} + \beta_2 X_{2i} \ldots + \beta_k X_{ki} + e_i$ …… (1)

$$ci* = \beta Xi + ei \quad \ldots\ldots (2)$$

c* is the dependent variable (levels of tax compliance). ; β is the vector of estimated parameters and is the vector of explanatory variables ; e_i is the error term, which is assumed to be normally distributed (zero mean and unit variance).

ci, the observed ordinal variable, takes on values 0 through m according to the following scheme: $ci = j \text{ if } \gamma j-1 < ci^* \leq \gamma j$ …….. (3)

Where j=0, …… 4 and yj's are cut off points (boundaries). Therefore, the order response categories can be rewritten as follows:

ci=1 if $ci^* \leq u1$
ci=2 if $u1 < ci^* \leq u2$
ci=3 if $ci^* > u2$

Consequently, the probability that alternative j is chosen is the probability that the latent variable y_i^* is between two boundaries γ_{j-1} and γ_j.

$P(c_i = j \mid Zi) = P(\gamma_{j-1} < c_i^* \leq \gamma_j) = \Lambda(\gamma_j - Z_i\beta) - \Lambda(\gamma_{j-1} - Z_i\beta)$ ……(4)

Hence, the probability of each level of compliance (low, medium, and high) was computed and rewritten as

follows:

$P(c_i = 1 \mid Z_i) = P(c_i^* \leq \gamma_1 \mid Z_i) = \Lambda(-Z_i\beta)$

$P(c_i = 2 \mid Z_i) = P(\gamma_1 < c_i^* \leq \gamma_2 \mid Z_i) = \Lambda(\gamma_2 - Z_i\beta) - \Lambda(-Z_i\beta)$

$P(c_i = 3 \mid Z_i) = P(c_i^* > \gamma_2 \mid Z_i) = 1 - \Lambda(\gamma_2 - Z_i\beta)$

Since the equation of the dependent variable (c_i) in an ordered logit model is nonlinear, only the signs of the coefficients can be directly interpreted and not their size. To interpret the influences of the explanatory variables on compliance level of tax payers, the marginal effects were calculated. This can also control the violation of parallel lines assumption or proportional odds assumption. According to Wooldridge (2010), the direction of the effect of explanatory variable, say X_k, only on the probabilities $P(y = 0 \mid x)$ and $P(y = j \mid x)$ is unambiguously determined by the sign of β_k. Whereas, the intermediate categories, 1, 2…j-1, are ambiguous. Therefore, for the interpretation of the study results, it is plausible to focus on the values of either the lowest (Low compliant) or highest (High compliant) category of the marginal effects.

2.5 Variable Description and Hypothesis

2.5.1 The Dependent Variable

Levels of compliance (compliance): this variable took values of orders as low compliant (c_i=1), medium compliant (c_i =2), and high compliant (c_i = 3).

2.5.2 The Independent Variables

2.5.2.1 Gender (gender)

The association between gender and tax compliance has received some attention in prior literature however, findings vary across studies. Some studies found that males are more compliant but others found female tax payers are more compliant (Wollela & Fjeldstad, 2016). Hence, female taxpayers were expected to have more tax compliant.

2.5.2.2 Age (age)

Age of the tax payer is one of important factors affecting tax compliance, and older taxpayers were expected to have more complaints.

2.5.2.3 Education (education)

Education and compliance attitude have statistically significant relation. Those individuals with a higher education level are more likely to have a higher level of moral development and higher level attitudes toward compliance and thus will tend to comply more (Chan *et al.*, 2000). Thus, educated tax payers were expected more compliant.

2.5.2.4 Tax audits (taxaudit)

Economic model assumes that taxpayers try to increase their benefit of comply by weighting the gain from non-compliance with the loss that can come with detection and punishment. Audits rates and the thoroughness of the audits could encourage taxpayers to be more prudent in completing their tax returns, report all income and claim the correct deductions to ascertain their tax liability (Allingham & Sandmo, 1972). Thus, Tax audit was expected to have positive impact on tax compliance.

2.5.2.5 Penalties (penalty)

Penalties and fines also appear to play a significant role in the success of good tax system. Some studies showed that compliance increased significantly with higher penalties (Tilahun & Yidersal, 2014; Tadesse & Goitom, 2014; Kirchier *et al.*, 2008). Penalty was supposed to have positive influence on tax compliance.

2.5.2.6 Tax rate (taxrate)

Tax rate is an important factor in determining tax compliance behavior. The effect of tax rate on tax compliance is mixed. Some literatures report positive relationship (Kirchier *et al., 2008),* while others support a negative relationship between tax compliance and tax rate (Park & Hyun, 2003). Hence, tax rate was hypothesized to have either positive or negative impact on the level of tax compliance.

2.5.2.7 Tax compliance costs (cost)

Tax compliance costs were defined as all those costs incurred in the course of ensuring proper compliance with relevant tax regulations (Yonas, 2016). These costs can adversely affect tax compliance. Thus, tax compliance cost was expected to have negative impact on tax compliance.

2.5.2.8 Simplification of tax rules and regulations (simplicity)

A good tax system should be simple and easy to understand. Complexity may result in unintentional non-compliance if taxpayers have problems in filling out the tax form (Torgler, 2003). Therefore, a tax simplification was hypothesized to have positive impact for tax compliance.

2.5.2.9 Strength of tax authority (strength)

The role of the tax authority in minimizing the tax gap and increasing voluntary compliance is clearly very important (Hasseldine & Li, 1999). Strength of the tax authority was expected to have positive impact on tax compliance.

2.5.2.10 Tax payers' awareness about the tax law (awareness)

The influence of knowledge on compliance behaviors has been assessed in various researches. Attitude towards tax compliance can be improved through the enhancement of taxation knowledge. When a taxpayer has a positive attitude towards tax, this will reduce his or her inclination to evade tax payment (Eriksen & Fallon, 1996). Taxpayers' awareness about the tax law was expected to have positive impact on tax compliance.

2.5.2.11 Tax collection enforcement (enforcement)

Tax collection enforcement is the action of enforcing the collection of the assessed outstanding tax debts (or delinquent taxes) from taxpayers who did not voluntarily comply with their tax obligation through seizure and sell of property and without going to a court. Tax collection enforcement was supposed to have positive impact on tax compliance.

2.5.2.12 Corruption (corruption)

Collusion between corrupt taxpayers and corrupt tax officials puts honest taxpayers at a disadvantage, encouraging them to evade taxes. Thus, corruption was expected to have negative effect on tax compliance.

2.5.2.13 Referent group (referent)

Referent group plays a significant role in evasion although it was not clearly mentioned which had stronger influence (family members or friends) (Allingham & Sandmo, 1972). Friends and family members are of significant influence to taxpayers' behavior. Thus, referent group was presumed to influence tax compliance.

2.5.2.14 Tax payers' attitude towards taxation (attitude)

Attitude is an important factor trying with satisfaction that will lead to tax payers' compliance behavior. Taxpayers can have a positive or negative attitude about tax in general and tax compliance in particular (Kirchier *et al.*, 2008). Therefore, tax payers' attitude towards tax was expected to have either positive or negative effect on tax compliance.

3. Results and Discussion

3.1. Descriptive Analysis

3.1.1. Tax Compliance Situation

The study used two alternatives to assess tax compliance situation. The first alternative was by analyzing responses from the respondents and the second alternative was through analyzing secondary data obtained from the branch annual performance report.

The first alternative, respondents were asked direct question to answer if they know there were tax payers who were not compliant (implicitly referring to them). As can be seen from the figure 1, 73.5 % of respondents have replied that there were noncompliant peoples to the tax law, which indicates that the largest number of tax payers were noncompliant in the study area. Hence, the response of sample respondents shows that the tax compliance situation of ERCA Hawassa branch was low.

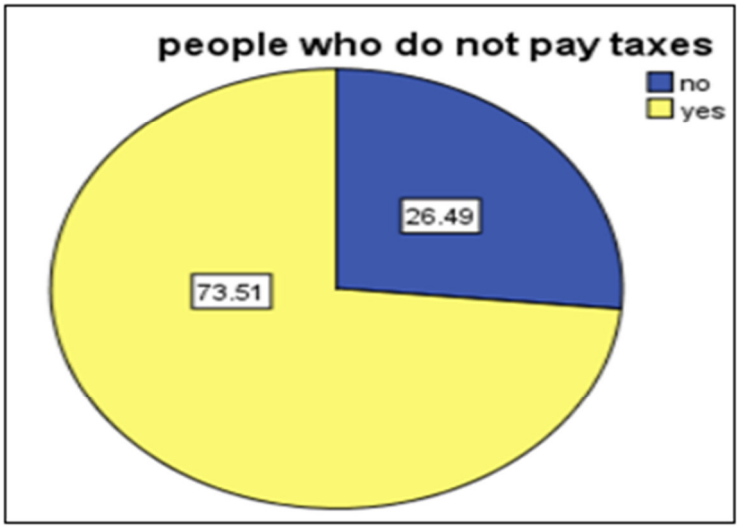

Figure 1: *Response of respondents about tax compliance situation*
Source: *Own survey, 2017*

The respondents were asked that "what are the possible reasons for the people who do not pay tax?" Accordingly, as it can be seen in figure 2 below, about 13.5 % of the sample households expressed that tax payers do not comply due to high tax rate, and about 27.03 % of the respondents are those tax payers who they know don't comply with the tax law pays less tax than they have to pay. About 16.76 % respondents believe that the noncompliant were contrabandists, while 15.67 % of them have responded that other reasons for

noncompliant include poor enforcement, lack of tax knowledge, personal financial constraints and insignificant penalty rate to penalize noncompliant.

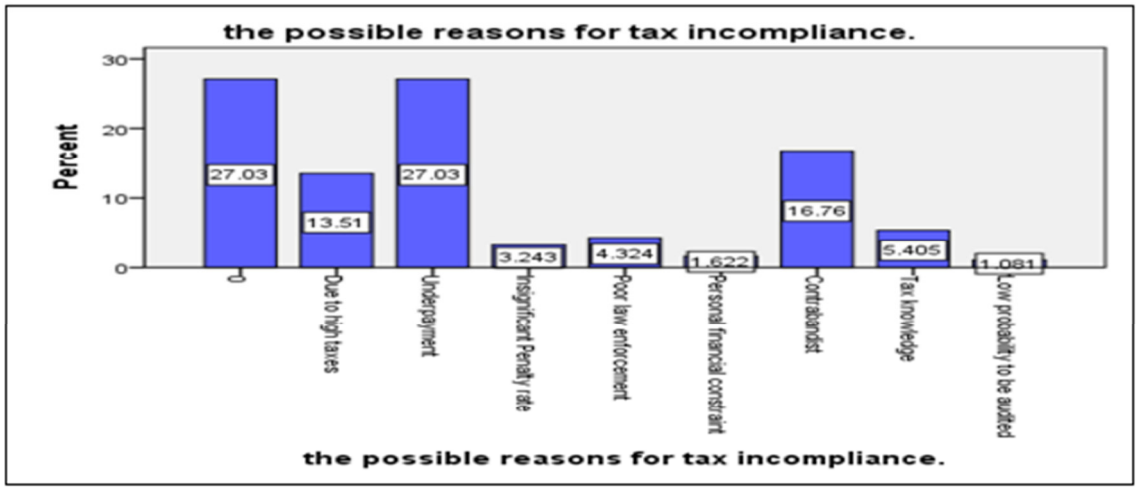

Figure 2: *The reasons of noncompliant tax payers*
Source: Own survey, 2017

The result conducted from sample tax payers shows that significant number of tax payers' registered at the branch, but pay their tax less than the expected amount since they understate their income or overstate their expense when they declare their tax obligation to the tax authority. Regarding contraband, the survey result stated in figure 2 indicates that there were number of peoples who were not registered in the tax authority. The result analyzed showed that underpayment and contraband (illegal trade) were high compliance risks of ERCA Hawassa branch.

The second alternative used to assess tax compliance situation of ERCA Hawassa branch was, assessing the number of filers and non-filers from tax payers registered at the branch based on the last five years annual performance report (2011/12-2015/16).

In the table 2 below business income tax and VAT filing situation of the branch taxpayers was presented. The data covers five consecutive tax years running from 2011/12-2015/16. Business income tax filing situation of the tax payers for the years stated shows that the percentage of those didn't file was 46.8, 52.6, 54.4, 53.1, and 51.6, consecutively. It indicates significant numbers of business income tax payers were not compliant and the noncompliance situation continued to prevail with no remarkable change. Analysis of business income tax and VAT filing situation of the branch, taking five years performance report data in to consideration, indicated that the compliance situation of ERCA Hawassa branch was very low.

Table 2: Summary of filing performance for ERCA Hawassa branch tax payers

Budget Year	Business income tax						Value added tax(VAT)				
	No. of tax payers	Filers	Payment filers	Lose filers	Nil filers	Non-filers	Expected vat declaration for the year	payment filers	credit filers	Nil filers	Non-filers
2011/12	971	517	261	219	37	454	5592	1104	1908	1782	798
2012/13	1075	510	161	349	-	565	6720	1643	1622	2235	1006
2013/14	1240	566	214	347	5	674	7128	1418	1841	2559	1056
2014/15	1464	686	337	379	-	778	8400	1660	2145	2792	1803
2015/16	1745	845	325	520	-	900	9420	1734	2482	2945	2259

Source: 2011/12-2015/16, Hawassa branch annual performance report.

3.1.2. Tax Compliance Level

Respondents were asked five different questions to identify their compliant level. Specifically, their intention to evade paying tax, their general feeling about fairness of the tax system, their acceptability to pay tax, their feeling about tax system discourage economic activities and finally how many people they know who were noncompliant. The average score of the five questions have been taken as a measurement of index for tax compliance. This index is generated by considering the tax compliance situations and problems which are specific to ERCA Hawassa branch. Based on this score, taxpayers were categorized into three levels of compliance: low compliant (c_i=1), medium compliant (c_i =2), and high compliant (c_i = 3). As can be seen from the bar chart below (fig. 3), about 18.9 % of respondents were high compliant, 50.8 % were medium and the rest

30.3 % were low compliant. The result indicates that most of the branch tax payers' compliance level was medium and low.

Figure 3: *The level of tax compliance*
Source: Own survey, 2017

3.2. Econometric Analysis

Ordered logistic regression model was used to analyze determinants of tax compliance. The data have been tested for multicollinearity and heteroskedasticity problems. The most commonly applied diagnostic test for multicollinearity problem is Variance Inflation Factor (VIF) for continuous variable and contingency test for discrete variable. As a rule of thumb, if the VIF of a variable exceeds 10, that variable is said to be highly collinear. Accordingly, the results of the VIF values for the variables confirmed that there is no serious problem of multicollinearity (Appendix I).

In order to apply ordered logistic regression model homoscedasticity of the error term should hold (Gujarati, 2004). Hence, these assumptions required to be tested. Breusch-pagan hetroskedasticity test was used to check existence of hetroskedasticity problem for errors. Therefore, the test result indicated that there is no problem of hetroskedasticity existed at 5 % significance level (Appendix II).

The model was estimated by including fourteen explanatory variables. Out of these independent variables, nine of them were statistically significant in influencing the tax compliance level (Table 3). Since the equation of the dependent variable (c_i) in an ordered logit model is nonlinear, only the signs of the coefficients can be directly interpreted and not their size. To assess the influences of the explanatory variables on level of tax compliance, marginal effects were computed.

According to Wooldridge (2010), the direction of the effect of explanatory variable, say X_k, only on the probabilities P(y = 0 | x) and P(y = j | x) is unambiguously determined by the sign of β_k. Whereas, the intermediate categories, 1, 2…j-1, are ambiguous. Consequently, for the interpretation of the study results, it is plausible to focus on the values of the highest (high compliant) category of the marginal effects (Table 3).

Table 3: Ordered Logistic Regression Results with marginal effect

Number of obs. = 185
$Chi^2(14)$ = 195.30
Prob > chi^2 = 0.0000
Log likelihood = -91.190811 Pseudo R^2 = 0.5171

Variables	Coefficient	Standard Error	Marginal Effect	P-Value
Age	.3490557	.251916	.0242253	0.166
Gender	-.451171	.5006498	-.0313124	0.367
Education	.4974905	.2725206	.034527	0.068*
Tax audit	.3881795	.2062334	.0269406	0.060*
Tax rate	-.5067302	.1979851	-.0351683	0.010**
Cost	-.0000264	.0000121	-1.83e-06	0.029**
Strength	.4721221	.2483384	.0327664	0.057*
Penalty	.1790619	.1901295	.0124273	0.346
Simplicity	.2677834	.2349004	.0185848	0.254
Corruption	-.7958465	.4068362	-.0552337	0.050*
Enforcement	-.3534967	.2185283	-.0245335	0.106
Referent	1.252953	.2478906	.086958	0.000***
Awareness	1.452799	.4722873	.1008278	0.002***
Attitude	.6345507	.2051891	.0440394	0.002***

Note:, ** and *** indicate statistically significant at 10 %, 5 % and 1 % probability level, respectively.*
Source: *Own survey and model result, 2017*

The result on Table 3 shows that the likelihood ratio chi-square of 195.30 with a p-value of 0.0000 tells us that the model as a whole is statistically significant. The Pseudo R-square 0.5171 implies that about 51.7 % of the change in tax compliance (compliance) is explained by explanatory variables.

3.2.1. Tax rate

As the ordered logit regression model result indicates, tax rate is one of the factor that determines tax compliance level of the tax payers. The coefficient result (β= -0.50) revealed that statistically negative and significant ($p < 0.05$) relationship between tax rate and tax compliance with marginal effect (-.0351683). A one % increase in marginal tax rate will discourage tax compliance by 3.5 %, other factors being constant. The result is also consistent with Park and Hyun (2003), which reported that the increase in tax rate strengthen the incentive to report less income to compensate the reduced income. Hence, the hypothesis that tax rate negatively affect tax compliance was confirmed.

3.2.2. Tax audit

The result of tax audit was found to be positive as hypothesized and significantly ($p < 0.1$) determine tax compliance (β=0.38) with marginal effect (.0269406). This indicates that other factors remain the same, when the probability of being audited increase by one unit the probability of tax compliance of tax payer increase by 2.7 %. The result is also consistent with Tadesse and Goitom (2014); Amina and Sania (2015); Niway and Wondwosen (2016).

3.2.3. Tax compliance cost

Tax compliance cost was found to be negative and statistically significant relationship with tax compliance at 5 % significance level. The ordered regression result (β= -.0000264) with marginal effect (-0.0002) indicates that a one birr increase in compliance cost causes tax compliance behavior of the tax payer decrease by 0.02 %, other factors being constant. The result indicates that, the increase of costs incurred by the tax payers to meet their tax obligation decrease tax compliance.

3.2.4. Tax payers' awareness about the tax law

Taxpayers' awareness about the tax law was found to be positive and statistically significant relationship with tax compliance at 1 % significance level (β= 1.452799) with marginal effect (.1008278). The result indicates that as the individual's tax law awareness improves, the tax compliance behavior of individual increase by 10.1 %, other factors being constant. This result is also consistent with Niway & Wondwossen (2016).

3.2.5. Strength of the tax authority

The variable was found to have positive and significant relationship with tax compliance at 10 % significance level (β= .4721221) with marginal effect (.0327664). When the strength of the tax authority increased, the probability of tax compliance behavior of the individual increased by 3.3 %, other factors being constant. Tax administration with a skilled and responsible staff is important in increasing tax compliance level of tax payers.

3.2.6. Corruption

The result of ordered logit regression revealed that corruption was found to have statistically significant at 10 % level of significance and negatively influence on tax compliance (β= -0.7958465) with marginal effect (-

0.0552337). This indicates that one unit increase in the tax payer perception of corruption on the tax officials, it decreases the probability of compliance behavior by 5.5 %, other factors being constant. This finding is also supported by other previous study conducted in Ethiopia. Wollela & Fjeldstad (2016) reported that the perception of corruption in the tax authority decreases the compliance attitude of the tax payers.

3.2.7. Tax payers' attitude towards tax

The variable was found to be positive and significant relationship with tax compliance by 1 % significance level (β= .6345507) with marginal effect (.0440394). The result indicates when an individual's attitude towards taxation was being positive, the probability of tax compliance behavior of the individual increased by 4.4 %, other factors being constant.

3.2.8. Referent group

As it was hypothesized**,** this variable was found to have positive and statistically significant (at 1 % significance level) relationship between referent group and tax compliance (β= 1.252953) with marginal effect (0.086958). The result indicates that as tax payers' dealings with their referent has increased, the probability of individuals on their tax compliance was increased by 8.7 %, other factors being constant. This finding is consistent with studies conducted by Tilahun & Yidersal (2014), and Niway & wondwossen (2016).

3.2.9. Educational level

The result of this study showed that educational level of tax payers was positively and significantly determine tax compliance at 10 % significant level (β= 0.4974905) with marginal effect (0.034527). Accordingly, as education status of an individual was improved by one level, the tax compliance behavior of the individual increased by 3.5 %, other factors being constant. The finding suggested that educated tax payers are tend to comply with tax laws compared with no educated tax payers. The result is also consistent with Chan *et al.* (2000), and Niway & Wondwossen (2016).

4. Conclusion

The study examined determinants of tax compliance using data obtained from sample respondents of ERCA Hawasa branch tax payers. The analysis indicated that tax compliance was influenced by demographic, socio-economic and tax system factors. Specifically, tax compliance level was determined by tax audit, tax rate, tax compliance cost, strength of the tax authority, tax payers' awareness about the tax law, corruption, referent group, public attitude towards taxation and educational level factors. These factors need reconsiderations and firm commitments by the responsible government body (i.e., tax officials) and the business community to enhance the tax compliance behavior of the tax payers.

Particularly, tax officials need to create awareness to and improve attitude of the business community on how to tackle the low level compliance situation in the study area and to enhance government's revenue collection capacity. Furthermore, strengthening the tax office's tax audit structure, improving its efficiency to reduce excessive costs incurred, providing efficient and transparent service delivery to the taxpayers to control corruption, and conducting continuous assessment on the tax rates to be imposed so that fair rates are decided. Taking these recommendations in to consideration, the revenue collection by tax officials in the study area, in particular, and in Ethiopia, in general, will be improved.

Conflict of interest

There is no conflict of interest between authors.

References

Ali, M., Fjeldstad, O.-H., & Sjursen, I. (2014). To pay or not to pay? Citizens' attitudes towards taxation in Kenya, Tanzania, Uganda and South Africa. *World Development* , 64: 828-42.

Allingham, M., & Sandmo, A. (1972). Income tax evasion; a theoretical analysis. *journal of public economics*, 323-338.

Amina, A., & Saniya, K. (2015). Tax Compliance and its Determinants the case of Jima Zone, Ethiopia . *International Journal of Research in Social Sciences* , Vol. 6, No.2.

Carter, A., & Cebreiro, A. (2011). Africa's tax system: A survey OECD Observer. *OECD Centre for Tax Policy and Administration; 284.*

Chan, C., Troutman, C., & O'Bryan, D. (2000). An expanded model of taxpayer compliance. Empirical evidence from United States and Hong Kong. *Journal of international accounting, auditing and taxation*, 9(2).

Creswell, W. (2003). *Research Design: Qualitative, Quantitative and Mixed Approaches, 2nd ed.* New Delhi: Sage.

ERCA. (2016). ERCA, (2016). For the year ended 2015/2016 main activities plan accomplishment report. *Ethiopian Revenue and Customs Authority Addis Ababa*.

Eriksen, K., & Fallon. (1996). Tax knowledge and attitudes towards taxation: A report on a quasi-experiment. *Journal of Economic Psychology*.

Gujarati, D. (2004). *Basic Econometrics. 4th Edition.* New York: McGraw–Hill Co.

Hasseldine, J., & Li, Z. (1999). More tax evasion research required in new millennium. *Crime, Law and Social Change*, 31 (1).

IMF. (2016). Staff report; and statement by the executive director for the Federal Democratic Republic of Ethiopia. . *International Monetary Fund, Washington, D.C.*

Joseph, S. (2016). Assessing Taxpayer Compliance Risk Identification Criteria at the Kenya Revenue Authority. *African Tax Research Network (ATRN)*.

Kirchler, E., Hoelzl, E., & Wahl, I. (2008). Enforced versus voluntary tax compliance: The "slippery slope" framework. *Journal of Economic Psychology*, 29(2): 210-225.

Niway, A., & Wondwossen, J. (2016). Determinants of Voluntary Tax Compliance Behavior in Self-Assessment System: Evidence from SNNPRS, Ethiopia. *International Journal of Science and Research (IJSR)* , ISSN (Online): 2319-7064.

Park, C., & Hyun, J. (2003). Examining the determinants of tax compliance by experimental data: A case of Korea. *Journal of Policy Modelling*, 25: 034-040.

Singh, A., & Masuku, M. (2014). Sampling Techniques and Determination of sample size in applied statistics research: An overview . *International Journal of Economics, commerce and management*, vollume2 .

Tadesse, G., & Goitom, A. (2014). Factors influencing taxpayers' compliance with the tax system: An empirical study in Mekelle City, Ethiopia . *eJournal of Tax Research*, vol 12, no. 2, 433-452.

Tilahun, A., & Yidersal, D. (2014). Determinants of Tax Compliance Behavior in Ethiopia: The Case of Bahir Dar City Taxpayers. *Journal of Economics and Sustainable Development*, Vol.5, No.15.

Torgler, B. (2003). Tax morale: Theory and Empirical Analysis of Tax Compliance. *University of Zurich*.

Verbeek, M. (2004). *A guide to modern econometrics, 2nd ed* . Rotterdam: Erasmus University .

Wollela, A., & Fjeldstad, O.-H. (2016). Business people's views of paying taxes in Ethiopia. *ICTD Working Paper 43*.

Wooldridge, J. (2010). *Econometric Analysis of Cross Section and Panel Data. 2nd edition.* Cambridge, Massachusetts.: The MIT Press.

Yonas, S. (2016). Assessment of Tax Payers attitude A study in Ethiopia, SNNPR, Gedio Zone, Ethiopia. *International Journal of Commerce and Management Research*, Vol. 2: 129-135.

Appendices

Appendix I: Variance Inflation Factor (VIF) for continuous independent variables

Variable	VIF	1/VIF
Tax audit	1.71	0.585839
Tax rate	1.35	0.738970
Cost	1.30	0.766910
Strength	2.83	0.448188
Penalty	1.53	0.652458
Simplicity	1.85	0.540747
Enforce	1.38	0.722435
Referent	1.26	0.793271
Attitude	1.38	0.722987
Age	1.29	0.772598
Education	1.42	0.705982
Mean	1.57	

Appendix II: Heteroskedasticity test:

Breusch-Pagan / Cook-Weisberg test for Heteroskedasticity

Ho: Constant variance

Variables: gender, age, education, taxrate, taxaudit1, referent. penality cost11, strength simplicity, corruption1, awareness1, enforcement, attitude2

chi2(14) = 25.31

Prob > chi2 = 0.0316