

IMPACT OF TAX AUDIT ON IMPROVING TAXPAYERS COMPLIANCE: EMPIRICAL EVIDENCE FROM ETHIOPIAN REVENUE AUTHORITY AT FEDERAL LEVEL

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Abstract

Tax audit can play a major role in improving tax administration and overall taxpayer compliance by impacting on taxpayer behavior. The study has attempted to examine the impact of tax audit on tax compliance in Ethiopia, at federal level by using secondary macro data. To analyze the data the partial coefficient regression statistical analysis method was employed. The Pearson correlation and bivariate regression result shows, there is a strong association between probability of audit detection and the level of tax compliance. The regression result also reveals that there is a strong association between the number of audited files and the level of tax compliance. Pearson Correlation and partial regression coefficient result shows that there is a strong association between probability of audit detection and the number of audited files with the level of tax compliance. The partial coefficient regression result shows that the joint effect of probability of audit detection and number of audited files highly improves the level of tax payer's compliance over the individual effect. The study concludes that since the contribution of tax audit on improving tax payer's compliance is significant among other measures, revenue authorities of the country and other concerned parties should give more emphasis on the role of tax audit by fulfilling the required staff and qualifications to improve tax payer's compliance and thereby increasing countries revenue through tax.

Keyword: Tax, Tax Audit, Tax payer's compliance.

Introduction

The development of any nation depends on the amount of revenue generated and applied by the government on public infrastructure for the benefits of members of that society. No economy can grow without adequate resources for infrastructural development and provision of power and public utilities and services. Taxes, and tax systems, are fundamental components of any attempts to build nations, and this is particularly the case in developing or transitional nations (McKerchar and Evans, 2009).

As Brautigam (2008) stated that taxes underwrite the capacity of states to carry out their goals; they form one of the central arenas for the conduct of state-society relations, and they shape the balance between accumulation and redistribution that gives states their social character. In line with this, taxes build capacity (to provide security, meet basic needs or foster economic development) and they build legitimacy and consent (helping to create consensual, accountable and representative government) (McKerchar et.al, 2009). In addition, Azubike (2009) noted that a tax system is an opportunity for the government to collect additional revenue needed in discharging its present obligations. Okezie (2003) states that a tax is a burden which every

citizens must bear in order to sustain his or her government thus enabling that government perform certain basic functions to the benefit of those its' governance. Thus, it is evident that a good tax structure plays a multiple role in the process of economic development of any nation, of which Ethiopia is not an exception. The government of Ethiopia has several options to finance its public expenditures and pursue its fiscal policy. These options include imposing of taxes on businesses and persons, and non-tax revenues such as service fees, money prints, loans (both domestic and foreign institutions), property and investment income, privatization of public enterprises, and domestic and foreign grants. Among others, tax along with customs collections is an important source of revenue for every government, and is a heart to a country's well being (Damme et al. 2008). In Ethiopia, however, total tax revenue performance has been relatively poor that accounts an average of 10.9 percent of gross domestic product (GDP) during 1990-94 and 12.9 percent of GDP during 2000-06 (McKinley and Kyrili, 2009). The proper amount of tax must be collected on a timely manner for successfully improving and maintaining steady economic progress of a nation. To do this, the enforcement powers of the tax administration, including tax audit, must be applied judiciously and in an evenhanded fashion (Baurer, 2005). A tax audit is an examination of whether a taxpayer has correctly reported its tax liability and fulfilled other obligations. It is often more detailed and extensive than other types of examination such as general desk checks, compliance visits or document matching programs (OECD, 2006a).

As Biber (2010) noted, the role of an audit program in a modern tax administration must extend beyond merely verifying a taxpayers reported obligations and detection of discrepancies between a taxpayer's declaration and supporting documentation. Tax audit may increase tax revenue in two ways: directly through assessment of additional taxes, and indirectly by improving taxpayer compliance with the tax laws and regulations (Barreca and Ramachandran, 2004). Therefore, for taxation to be effective in achieving both short and long term goals in any economy, the level of tax compliance must be improved for efficient tax administration. Hence, one measure that can be used to improve the level of tax compliance is tax audit. Ola (2001) stated that tax audit helps to improve voluntary compliance by detecting and bringing into account those who do not pay correct amount of tax. In line with this, Slemrod, (2000) noted that tax audit is one of the most effective policies to prevent tax evasion behaviour. Therefore, the intent of this study is to examine the impact of tax audit on tax compliance in Ethiopia.

Statement OF the problem

One of the more vexing problems for policy makers in developing and transition economies is encouraging high levels of tax compliance. This issue is independent of the overall tax "take" from GDP. For, even if one begins from a position that government should be small, high tax compliance is necessary for efficiency and equity as well as for the development of social capital (Slemrod, 1992).The major economies of the world are built and supported by a sustainable system of revenue generation. One major sustainable means of revenue generation globally is taxation. The fundamental goal of any revenue authority is to collect taxes and duties payable according to the law (McKerchar et.al, 2009). However, when it comes to the obligations imposed on them by law, taxpayers are not always compliant. Therefore, for taxation to be effective in achieving both short and long term goals in any economy, the level of tax compliance must be improved for efficient tax administration. Hence, one measure that can be used to improve the level of tax compliance is tax audit.

Audit can play a major role in improving tax administration and overall taxpayer compliance by impacting on taxpayer behavior. In addition to raising revenue directly from audit activities, by selecting the highest risk cases, efficiently detecting non-compliant taxpayers, applying appropriate sanctions, and publicizing results of audit activity (either generally or specifically),

taxpayers get the message that any attempt to avoid tax presents a high risk of detection and the penalty for non-compliant taxpayers is substantial(Kagina ,no date). Tax audits; as a result provides tax administration with significant leverage across the community.

Tax audit is an independent examination of the returns submitted by taxpayers to the relevant tax authorities to ascertain the level of tax compliance by taxpayers. In connection to this notion, a tax audit is an examination of whether a taxpayer has correctly reported its tax liability and fulfilled other obligations. It is often more detailed and extensive than other types of examination such as general desk checks, compliance visits or document matching programs (OECD, 2006a). As Biber (2010) noted, the role of an audit program in a modern tax administration must extend beyond merely verifying a taxpayer's reported obligations and detection of discrepancies between a taxpayer's declaration and supporting documentation.

An important issue for any government and revenue collecting authority is to obtain knowledge and understanding of the reasons for taxpayer non-compliance. However, measurement of the magnitude of intentional and unintentional non-compliance can be difficult as it involves estimating levels of uncollected tax, which by its nature is not detected by the revenue authority. The amount of tax lost through evasion is potentially enormous. The IRS estimated it to be \$US 345 billion in 2006 which amounted to 16.3 percent of estimated actual paid plus unpaid tax liability (Slemrod, 2007). A considerable previous literature and much best practice knowledge and experience currently exist in respect of both tax administration and taxpayer compliance (see for example, Bird, 2004, and Franzoni, 1999), However, the reality is that much of these literature, knowledge and experience have emanated from developed countries and the extent to which they apply to developing economies is insufficient. As a result, Policy makers and revenue authorities in developing economies in general and in Ethiopian case in particular face quite different challenges and constraints.

In Ethiopia, there are three studies reviewed regarding tax audit in different settings. Yesegat (2008) studied VAT administration problems at large, VAT audit in particular, Gebeyehu (2008) studied tax audit and its role in increasing government revenue in Ethiopia and Mihret (2011) examines tax audit practice in Ethiopia (the case of federal government).

However, as far as the researchers' knowledge, tax audit impact on improving tax compliance not yet widely studied in developing nations in general and in Ethiopian case in particular. Given this gap of knowledge, together with the fact that improving tax payer compliance is one of the most important but least studied aspects of fiscal reform in developing economies, there appears considerable potential area for research. Therefore, the intent of this study is to examine the impact of tax audit on improving tax payers' compliance in Ethiopian case at federal level by using secondary macro data.

Literature Review

Theoretical Studies: Nature of Tax Compliance

Verboon and Dijke (2007) stated that tax compliance is the willingness of individuals to comply with relevant tax authorities by paying their taxes. Others like, Alm (1991) and Jackson and Milliron (1986) defined tax compliance as the reporting of all incomes and payment of all taxes by fulfilling the provisions of laws, regulations and court judgments. In addition to these, Singh (2003), defined as tax compliance is a person's act of filing their tax returns, declaring all taxable income accurately, and disbursing all payable taxes within the stipulated period without having to wait for follow-up actions from the authority.

Theoretically the above definitions of tax compliance are acceptable. However, when it comes to the obligations imposed on them by law, taxpayers are not always compliant. Most tax payers are not paying their tax liabilities voluntary because of lack of understanding the

benefits of being compliant. Therefore, the following section states the benefits of tax compliance.

Nature And Importance Of Tax Audit

Kircher (2008) defined as tax audit is an examination of an individual or organization's tax report by the relevant tax authorities in order to ascertain compliance with applicable tax laws and regulations of state. He further reported that tax audit is a process where the internal revenue service tries to confirm the numbers that you have put on your tax return. In line with this notion, a tax audit is an examination of whether a taxpayer has correctly reported its tax liability and fulfilled other obligations. It is often more detailed and extensive than other types of examination such as general desk checks, compliance visits or document matching programs (OECD, 2006a). Ola (2001) stated that the process of tax audit involves tax returns that are selected for audit using some selection criteria. Subsequently, the underlying books and records of the taxpayers are examined critically to relate them to the tax return filed. Tax audit is important because of its support to the government in collecting suitable tax revenue essential for budget, maintaining economic and financial order and stability, to ensure that satisfactory returns are submitted by the tax payers, to organize the degree of tax avoidance and tax evasion, to ensure strict compliance with tax laws by tax payers, to improve the degree of voluntary compliance by tax payers and to ensure that the amount due is collected and remitted to government.

According to Badara (2012), tax audit objective includes to establish a viable and effective tax administration in order to deal with constantly changing economy, to put strategies in place in order to resolve tax dispute between the tax authority and the liable tax payers, to maintain a strong mechanism to deal with tax avoidance techniques which are available to various organizations, but are susceptible to tax abuse, to bring defaulting tax payers to the net of tax authorities, to prove the completeness, accuracy and timely filing of tax returns submitted by the tax payers. As Biber (2010) noted, the role of an audit program in a modern tax administration must extend beyond merely verifying a taxpayer's reported obligations and detection of discrepancies between a taxpayer's declaration and supporting documentation. In addition, the author stated that ,most taxpayer's report their tax liabilities more accurately if they believe that the tax administration has the capacity to detect any unreported liabilities and that heavy penalty may be applied when they are detected. Thus, tax audit results in increased tax revenue in two ways: (1) directly through assessment of additional taxes; and (2) indirectly by discouraging underreporting of liabilities by all taxpayers. Additionally, Barreca and Ramachandran (2004) noted that the purpose of tax audit is to check the evasion of tax and ensure compliance in accordance with the laws and regulations.

Kagina (Uganda Commissioner of General Revenue Authority) affirmed that audit can play a major role in improving tax administration and overall taxpayer compliance by impacting on taxpayer behavior. In addition to raising revenue directly from audit activities, by selecting the highest risk cases, efficiently detecting non-compliant taxpayers, applying appropriate sanctions, and publicizing results of audit activity (either generally or specifically), taxpayers get the message that any attempt to avoid tax presents a high risk of detection and the penalty for non-compliant taxpayers is substantial. Tax audits therefore provide the tax administration with important power across the community rather than only impacting on the taxpayer selected for audit and collecting the tax that should have been paid in the first place.

Empirical Studies

A number of empirical studies examined tax administration in both developed and developing countries, tax audit program in particular. All of them with the exception of Yesegat (2008), Gebeyehu (2008), and Mihret (2011), were emanated from developed countries and applying

different settings. The following section presents briefly these studies which was adopted and modified from different authors.

Bright et al. (1988) studied statistical sampling for tax audits in United States of America (USA), tried to review whether the use of statistical sampling for audit is a sufficient basis for determining the taxpayers' unpaid liability rather than reviewing all transactions to determine the exact amount of tax owed. The study used case studies, and relied on the cases and data from consumption taxes, primarily sales and use taxes of three agencies including Internal Revenue Service (IRS), the revenue departments in New York and Pennsylvania. The finding of the study indicated that audit assessment based on appropriately drawn and analyzed statistical sample do not suffer from the defects that the courts have correctly concluded mar assessments based on non-statistical samples. Without sampling, it may be literally impossible for a tax examiner with a limited staff to audit an entire period especially when dealing with a taxpayer who conducts a large volume of transactions. The study further indicated that sampling techniques allow improved economies in the use of government resources in that tax administration can be more efficient, fairer, and less intrusive if the technologies used for identifying and measuring tax deficiencies are expanded to include controlled use of statistical sampling. The common interest of minimizing the duration of tax audit for both the tax administration and taxpayers can also be achieved with sampling techniques. However, statistical sampling cannot provide an exact determination of tax owed, and the uncertainty adjustment may sacrifice too much revenue.

Collins and Plumlee (1991) studied the effect of tax audit schemes on the taxpayer's labor and reporting decision. The study also examined the impact of alternative tax rates and penalty levels on earned and underreported income. Experimental design was adopted, and laboratory labor setting was used to test the effects of audit schemes, tax rates, and penalty levels on underreported income and work effort. The experimental results of the study indicated that audit schemes that incorporate some preliminary information signal sent by the taxpayer might be more successful in curbing underreporting than purely random audit models. Nonrandom schemes are most effective when tax rates are low and penalty levels are rather high. Further, reported income and actual income do vary at the same time in that electing to underreport also earn more actual income.

In USA, Smith and Stalans (1994) also studied the negotiating strategies preferred by taxpayers and auditors for dealing with tax audit disputes. The study adopted a pre-audit open-ended interview conducted with a randomly selected sample of taxpayers and state tax auditors that drawn from four field offices of the Oregon Department of Revenue (DOR). The results of this study revealed that the strategic preferences of both taxpayers and auditors is influenced by the nature of the dispute, general taxpayer's attitudes toward taxpaying and tax administration, the difference in formal power, and the perceived role obligations of auditors. As the study results showed, tax auditors are more likely to include holding firm as one of their strategic choices. Whereas taxpayers who has an objective to minimize the time and effort they devote to the audit are more likely to prefer the cooperative strategies, but those taxpayers who believe that they can influence the decision making of the auditor are more likely to prefer the assertive strategies. The study further indicated that taxpayers who support taking advantage of loopholes and ambiguities in the tax law tend to prefer the assertive strategies, and those who want to minimize their involvement are more likely to prefer cooperative strategies.

Rhoades (1999) studied in USA on the impact of multiple components reporting on tax compliance and audit strategies. The study modeled taxpayer compliance behavior and tax authority audit strategies within the context of a multidimensional report of taxable income, and analyzed the impact of component reporting requirements on taxpayer incentives to misstate the tax liability. The study developed a model on a strategic tax reporting and

detection in which taxpayers privately observe and report on two components of taxable income, denoted A and B. The results of the study discovered that the impact of multi-component reporting requirements on specific taxpayers depends critically on their evasion opportunity set. The study declared that taxpayers with multiple evasion opportunities made misstatement across income components to minimize both the direct and indirect effects of detection whereas those with limited evasion opportunities pursued them less aggressively in the multi-component model. Further, in auditing reports with multiple potential misstatements, the tax authority benefits from joint cost efficiencies, positive correlation of true values, and sequential audit strategies as a means to update its evasion expectations.

Chan and Mo (2000) studied in China on the effect of tax-holidays (exemption and reduction) on foreign investors. The study adopted case studies, and used tax audit data (585 cases of 1996 tax returns of foreign investment enterprises audited in 1997). The cases were selected at random. In this study, noncompliance was measured in terms of tax audit adjustment that is overstatement of cost of sales in the pre-holiday period and over-provision for staff welfare in the post-holiday period. The empirical results of the study indicated that a company's tax-holiday position affects noncompliance. Companies are least compliant during the pre-holiday period whereas most compliant during the tax exemption period. The study further indicated that domestic market oriented companies, service companies, and joint ventures are less compliant than export oriented companies, manufacturing companies, and wholly foreign-owned enterprises, respectively.

The study also argued that business sector analysis might be a valuable policy tool for developing countries, which have a large shadow economy and a high share of microenterprises. Alm and McKee (2006) investigates the application of experimental methods to examine the individual compliance responses to a "certain" probability of audit, and conclude that the compliance rate rises if an individual knows he will be audited and the rate falls if he knows he will not be audited. Slemrod, Blumenthal, and Christian (2001) examines randomly selected taxpayers and inform them that their filling will be "closely examined" and found evidence of taxpayers' behavior changes in response to an increased probability of audit, although the responses are not uniform among different groups of taxpayers.

Mittone (2006) examines that early experience of audits in taxpayers' "tax life" is a more effective way to increase compliance than later audits. Also Kastlunger, Kirchler, Mittone, and Pitters (2009) study of experimental research also suggests that, although the effectiveness of audits and fines cannot be completely confirmed, early audits in taxpayers' "tax life" have a positive impact on compliance. Badara, M.S. (2012), Questionnaire based research by using descriptive statistics, result shows that the relevant tax authority (RTA) employed tax audit towards achieving target revenue, that tax audit reduce the problems of tax evasion, that tax payers do not usually cooperated with tax audit personnel during the exercise. Niu (2010) Historical population data of a New York State economic sector was used. The results of both Ordinary Least Squares (OLS) and Time Series Cross Section (TSCS) autoregressive modeling methods suggest that after an audit, a firm would report a higher sales growth rate.

Kleven et al (2010) 40,000 individual tax filers using experimental design and randomization test and SKAT's Business object Database with ordinary least square. There research found that tax evasion rate is small for income subject to third party reporting, but substantial for self reported income; marginal tax rates have a positive impact on tax evasion, but that this effect is small; prior audits substantially increase self reported income and threat of audit letters also have a significant effects on self reported income, and the size of this effect depends positively on audit probability expressed in the letter.

Hyun (2005) Japan & Korea using world value survey dataset and descriptive statistics and multiple regressions for analysis. The study result revealed that Japan has the higher level of

tax culture than that of Korea; and the legal system is relatively more important factor to determine the level of tax culture which eventually affects the level of compliance. Plumley et al (1996) Data set from 1982-1991 using OLS. The result found that there is a significant effect attributable to many tax policy and tax administration parameters; including: audits; third party information documents; the issuance of targeted non-filer notices; criminal tax convictions; marginal tax rates.

As far as the researchers' knowledge, tax audit impact on improving taxpayer's compliance not yet widely studied in developing nations in general and in Ethiopian case in particular. Given this gap of knowledge, together with the fact that improving tax payer compliance is one of the most important but least studied aspects of fiscal reform in developing economies, there appears considerable potential area for research. Therefore, the intent of this study is to examine the impact of tax audit on improving tax payers' compliance in Ethiopia at federal level by using secondary macro data.

Research Questions and Hypothesis

This study was intended to answer the following research questions and associated research hypothesis based on theoretical

RQ1. To what extent the probability of audit detection increases taxpayers' compliance?

H1: The level of taxpayer's compliance increase as the probability of audit detection increases.

RQ2. To what extent audited file rate increases taxpayers' compliance?

H2: The level of taxpayer's compliance increases as the number of audited files increases

RQ3: To what extent the occurrence of probability of audit detection and the volume of audited files increases the level of tax payers' compliance?

H3: The level of tax compliance increases as both the probability of audit detection and the volume of audited files increases simultaneously.

Research Methodology

Types and Sources Of Data

The type of data in this study was mainly used secondary data. Assessment of relevant documents of ERCA used as a secondary data sources

Methods of Data Collection

The secondary data was collected through the review and detail investigation of ERCA data from 2001/02 to 2014/2015.

Methods of Data Analysis

In order to achieve analyze the collected data inferential statistical methods of data analysis were applied.

Inferential Analysis

Using inferential analysis provide better insight into relationships between variables. The data collected for the key variables of the studies were analyzed using bivariate regression and partial coefficient regression analysis with the help of statistical package for social scientists (SPSS, Version16) application software.

Functional Relationship and Specification of the Model

Theories suggest a number of factors which might be affect tax payer's compliance important to increase revenue generation through taxation (tax volume) and then fostering economic growth. This study focuses the major factors which affect tax payer's compliance. Thus, let us outline the functional relationship. The signs expected for the regression coefficients are given in parentheses. And the magnitudes are left for the estimation.

Compliance level=f(probability of audit detection, audited file rates)

$$CL = f[AUDR, ADFR]$$

(+)

Variable description:

The dependent variable is **Compliance level (CL)** which is the aggregate amount of actual tax collected annually in a country as a percentage of expected annual tax volume(in %).

And the independent variables are:

- *AUDR* - Probability of audit detection measured as the number of tax auditors divided by taxpayer (in %)
- *ADFR*- the number of audited files measured by total audited files divided by total numbers of auditors (in %).

Data Presentation, Analysis and Discussion

Hypotheses Test and Interpretation

H1: Level of tax compliance increases as the probability of audit detection increases

The extent association of the role of probability of audit detection with the level of tax compliance was measured firstly by using Pearson correlation and secondly tests the hypothesis by using bivariate regression. The results presented in table 1 and table 2 below.

The Pearson Correlation at the 0.01 level of significance (2-tailed) result shows there is a strong positive association between the probability of audit detection and level of tax compliance. This indicates that as the probability of audit detection increases, the level of tax compliance increases. This can be supported by the plot of scatter gram of least-squares procedures to show the linear relationship between probability of audit detection and compliance level. The scatter gram in figure1 shows there is a linear relationship between probability of audit detection and compliance level. This shows, as probability of audit detection increases, compliance level increases.

Table 1: Pearson Correlation Result of AUDR and CL

	Compliance level	Audit rate
Compliance level	1	.992**
Audit rate	.992**	1

** . Correlation is significant at the 0.01 level (2-tailed).

Source: Author's own computation from ERCA, 2015

After determine the existence of association between the variables, by using bivariate regression we can derive the mathematical relationship in the form of equation. As Malhotra(2006,pp.573) stated that bivariate regression is preferred to show the mathematical relationship between a single metric dependent or criterion variable and a single metric independent or predictor variable. As a result, to test the significance of first hypothesis, this research uses bivariate regression. The results depicted in table 2 below.

Table 2: Bivariate Regression Result of AUDR and CL

R			.992 ^a		
R Square			.985		
Adjusted R Square			.983		
Std. Error of the Estimate			5.26576536		
ANOVA^b					
	<i>Df</i>		<i>Sum of Squares</i>		<i>Mean Square</i>
<i>Regression</i>	1		16207.518		16207.518
<i>Residual</i>	9		249.555		27.728
<i>F= 584.512 significance of f=0.0000</i>					
Variables in the model					
Variable	B	SEB	BETA(B)	T	SIGNIFICANCE OF T
(at 1% significance level)					
AUDR	78.768	3.268	.992	24.177	0.0000
(constant)	98.338	2.116		46.476	0.000

a, b .Dependent Variable: Compliance level

Source: Author's own computation from ERCA, 2015

Table 4 shows the model is significant ($F=584.512$; $Sig.F=.000$) and explained 98.50 percent of the variation in the level of tax compliance. The table also demonstrate the probability of audit detection is significantly related with the level of tax compliance ($\beta=78.768$, $p=.000$). The t statistics shows there is a significant linear relationship between the probability of audit detection with the level of tax compliance ($t=24.177$, $sig\ t=0.0000$). The positive sign of the slope coefficient indicates that this relationship is positive.

The regression equation:

$$CL=b_0+b_1 (AUDR)$$

$$\text{Level of tax compliance} = 98.338 + 78.769(\text{probability of audit detection})$$

H2: *The level of tax compliance increases as the number of audited files increases*

The extent association of the number of audited files with the level of tax compliance was measured firstly by using Pearson Correlation and then to test the hypothesis bivariate regression was used. The results presented in table 3 and table 4 below. The Pearson Correlation at the 0.01 level of significance (2-tailed) result shows that there is a strong association between the number of audited files and level of tax compliance. This indicates that the higher volume of audited files, the higher level of tax compliance. This can be supported by the plot of scatter gram of least-squares procedures to show the linear relationship between volume of audited files and the level of tax .

Table 3: Pearson Correlation Result of ADFR and CL

	Compliance level	Audited file rate
Compliance level	1	.912**
Audited file rate	.912**	1

** . Correlation is significant at the 0.01 level (2-

After determine the existence of association between the variables, by using bivariate regression we can derive the mathematical relationship in the form of equation. Table 4 shows the model is significant ($F=44.272$; $Sig.F=.000$) and explained 83.10 percent of the variation in the level of tax compliance. The table also reveal that the number of audited files is significantly related with the level of tax compliance ($\beta=12.575$, $p=.000$). The t statistics shows there is a significant linear relationship between the number of audited files and the

level of tax compliance ($t=6.654$, sig $t=0.0000$). The positive sign of the slope coefficient indicates that the existence of positive relationship between the variables.

The regression equation:

$$CL=b_0+b_1 (ADFR)$$

$$\text{Tax compliance level} = 100.895 + 12.575(\text{number of audited files})$$

Table 4: Bivariate Regression Result of ADFR and CL

<i>R</i>			.912 ^a		
<i>R Square</i>			.831		
<i>Adjusted R Square</i>			.812		
<i>Std. Error of the Estimate</i>			17.57621231		
ANOVA^b					
	<i>Df</i>	<i>Sum of Squares</i>	<i>Mean Square</i>		
<i>Regression</i>	1	13676.763	13676.763		
<i>Residual</i>	9	2780.309	308.923		
<i>F= 44.272</i>	<i>significance of f=0.0000</i>				
<i>Variables in the model</i>					
<i>Variable</i>	<i>B</i>	<i>SEB</i>	<i>BETA(B)</i>	<i>T</i>	<i>SIGNIFICANCE OF T(at 1% significance level)</i>
<i>ADFR</i>	12.575	3.268	.912	6.654	0.0000
<i>(constant)</i>	100.895	1.890		14.247	0.000

a, b .Dependent Variable: Compliance level .(Source: Author's own computation from ERCA, 2015)

H3: *The level of tax compliance increases as both the probability of audit detection and the number of audited files increases simultaneously.*

The extent association of the probability of audit detection and the amount of audited files with the level of tax compliance was measured firstly by using Pearson Correlation and followed by partial regression coefficient to test the hypothesis (the results presented in table 5 and table 8 below). Partial regression coefficient method of testing hypothesis is important to know the individual and combined effect of the independent variable on the dependent variable. This can be done by controlling the effect of one independent variable on the dependent variable (Malhotra, 2006, pp.584).

In table 5, the Pearson Correlation at the 0.01 level of significance (2-tailed) result shows there is a strong relationship between the probability of audit detection and the number of audited files with the level of tax compliance. This indicates that the higher probability of audit detection and higher number of audited files, the higher level of tax compliance.

Table 5: Pearson Correlation Result of AUDR, ADFR and CL

	Compliance level	Audit rate	Audited file rate
Compliance level	1	.992**	.912**
Audit rate	.992**	1	.944**
Audited file rate	.912**	.944**	1

** .Correlation is significant at the 0.01 level (2-tailed).

Source: Author's own computation from ERCA, 2015

Table 6 below shows the model is significant ($F= 434.585$, Sig. $F=0.0000$) and explained 99.10 percent of the variation in the level of tax compliance. The table also demonstrate that the

probability of audit detection and number of audited files were significantly related with the level of tax compliance (beta=**98.836**, p=.000). In line with this, the t statistics shows there is a significant linear relationship between the probability of audit detection and the number of audited files with the level of tax compliance (t=**11.840** , sig t=0.0000 and t= **-2.302** sig t=0.050) respectively.

The regression equation:

$$CL = b_0 + b_1 (AUDR) + b_2 (ADFR)$$

Level of tax compliance = 98.836 + 96.488 (probability of audit detection - 3.416 (number of audited files)

Table 6: Partial Regression Result of AUDR, ADFR and CL

R	.995 ^a				
R Square	.991				
Adjusted R Square	.989				
Std. Error of the Estimate	4.33146247				
ANOVA^b					
	<i>Df</i>	<i>Sum of Squares</i>		<i>Mean Square</i>	
<i>Regression</i>	1	16306.980		8153.490	
<i>Residual</i>	9	150.093		18.762	
<i>F= 434.585</i>	<i>significance of f=0.0000</i>				
Variables in the model					
Variable	B	SEB	BETA(B)	T	SIGNIFICANCE OF T(at
1% significance level)					
AUDR	96.488	4.148	1.216	11.840	0.0000
ADFR	-3.416	1.416	-0.236	-2.302	0.050
(constant)	98.836	1.754		46.476	0.000

a, b .Dependent Variable: Compliance level

Source: Author's own computation from ERCA, 2015

Findings

This study has attempted to examine the impact of tax audit on tax compliance in Ethiopia, at federal level by using secondary macro data.

The regression model explains 98.50 %, 83.10 % and 99.10 % of variation of the level of tax compliance. These shows the individual effect of probability of audit detection and the number of audited files and the joint effect of probability of audit detection and number of audited files on improving the level of tax payer's compliance respectively. From this we can see that the joint effect of probability of audit detection and number of audited files highly improves the level of tax payer's compliance over the individual effect. From the individual effects the probability of audit detection is better explain the variation of level of tax compliance over the number of audited files.

The probability of audit detection improve the level of tax payer's compliance by 98.50% and the remaining portion of 1.50% explained by other factors which were not mentioned in this study represented as error term (e). The number of audited files improve tax payer's compliance level by 83.50% and the remaining portion of 16.50% explained by other factors which were not mentioned in this study represented as error term (e). The joint effect of probability of audit detection and number of audited files improve tax compliance level by

99.10 % and the remaining 0.9% explained by other factors which were not mentioned in this study represented as error term (e).

Probability of Audit Detection

As shown in the Pearson correlation and bivariate regression above shows, there is a strong association between probability of audit detection and the level of tax compliance. The results confirm the researcher's expectations in the first hypothesis.

This reveals that the better existence of probability of audit detection improves tax compliance level better. Previous empirical studies support this result. Thomson (2008) stated that tax audit is one of the longest standing and accepted compliance strategies in tax administration. Hence, the tax audit program offers visibility to the compliance and enforcement support of the tax administration. The auditing and spot-checking of records, coupled with a system of adequate penalties for detected cases of fraud is the universal method for tax control and the prevention of tax evasion. Tax evasion can be brought to light only by a means of an effective audit program (Tait 1988). Tax audit also helps tax agencies to achieve revenue objectives that ensure the fiscal health of the country and individual states. It derives voluntary compliance and generates additional tax collections, both of which help tax agencies to reduce the tax gap between the taxes due and the amount collected (Barreca and Ramachandran 2004). Furthermore, a well structured tax audit program can provide valuable support in gathering information on the health of the tax system (including patterns of taxpayers' compliance behavior), educating taxpayers (improving future compliance), and identifying areas of the tax law that require clarification or addressing deficiencies in the law (OECD 2006a).

Accurate and timely self-assessment and compliance with tax by taxpayers is achieved only through highly visible and effective audit programs, including the consistent application of strong sanctions where noncompliance is encountered. Taxpayers must feel that there is a good chance that unreported liabilities and other forms of non-compliance have been detected during an audit (Biber 2010). Tax audit is a sole treatment for compliance risk available to administrations that allows exercising effective sanctions (imprisonment and penalties and/or interest). It acts as a public sanction making the extent of the administration's enforcement powers visible within the community and encouraging others to comply. Compliance risk is the failure to comply with the tax law by taxpayers whether due to their ignorance, carelessness, recklessness, deliberate evasion, or weaknesses in tax administration itself, and have been addressed only by enforcement through an audit-based approach (OECD 2004a).

Number of Audited File

The third objective of the study is to analyze the relationship between number of audited files and the level of tax payer's compliance in Ethiopia. The Pearson correlation and bivariate regression result above shows there is a strong association between the number of audited files and the level of tax compliance. The results confirm the researcher's expectations in the second hypothesis.

This indicates that as the number of audited files increase, the level of tax payers' compliance also increases. This result supported by previous studies. Voluntary compliance is generally enhanced by increasing the number of taxpayers audited than by auditing fewer taxpayers with large tax potential. Perversely, revenue is increased by concentrating on those taxpayers where a large amount of revenue is at risk. But there should be a careful planning when there is a widespread belief that most tax returns are underreported, otherwise there may be an over selection of returns for audit, with the result that the inventory of work in process may increase to unmanageable proportions and make an orderly approach to an annual audit work plan impossible (Tait 1988).

Effect Of Probability of Audit Detection and Number of Audited Files on Tax Compliance Level

The study wanted to examine the combined effect of probability of audit detection and **number** of audited files on the level of tax compliance. Pearson Correlation and partial regression coefficient result shows that there is a strong association between probability of audit detection and the number of audited files with the level of tax compliance. This indicates that the higher probability of audit detection and higher amount of audited files, the higher tax compliance level. This result is in line with the researchers' expectation in the third hypothesis. Previous studies support this result. Elffers (2000) and Braithwaith (2003) argued that if deterrence (that is the probability of detection and sanction severity) would be the most significant variable in explaining compliance, rational individuals in most societies of the world would be non-compliant because the levels of deterrence are low. In line with this, Verboon and Dijke (2007) stated that the essence of the deterrence model of tax compliance is to chiefly examine the interaction between probabilities of detection and sanction severity that should affect non-compliance.

Alm and McKee (2006) investigates the application of experimental methods to examine the individual compliance responses to a "certain" probability of audit, and conclude that the compliance rate rises if an individual knows he will be audited and the rate falls if he knows he will not be audited. Slemrod, Blumenthal, and Christian (2001) examines randomly selected taxpayers and inform them that their filling will be "closely examined" and found evidence of taxpayers' behavior changes in response to an increased probability of audit, although the responses are not uniform among different groups of taxpayers.

Mittone (2006) investigates that early experience of audits in taxpayers' "tax life" is a more effective way to increase compliance than later audits. Also Kastlunger, Kirchler, Mittone, and Pitters (2009) study of experimental research also suggests that, although the effectiveness of audits and fines cannot be completely confirmed, early audits in taxpayers' "tax life" have a positive impact on compliance.

In the model, the coefficient of number of audited files shows negative sign. This is due to the higher correlation between the probability of audit detection and number of audited files. As OECD (2006a) stated that audit activities with an excessive number of in-depth examinations reduce the numbers of audits that might be conducted, possibly leading also to less overall deterrent effect.

Conclusion

The Pearson correlation result shows that there is a strong relationship between the probability of audit detection and the level of tax compliance. The result also reveals that there is a strong relationship between the number of audited files and the level of tax compliance.

The bivariate regression result shows that probability of audit detection and the level of tax compliance is significantly positively related. The result also reveals that, there is a positive significant relationship between the number of audited files and the level of tax compliance.

The partial coefficient regression result displays that both the probability of audit detection and number of audited files were significantly related with the level of tax payer's compliance. This result shows that the joint effect of probability of audit detection and number of audited files better explain the level of tax compliance over the individual effect.

The results of the study are expected to contribute insights for empirical models to examine the impact of tax audit on improving tax payer's compliance by using secondary data. Potential limitations intrinsic in the usage of secondary data should be granted. That is, examining tax payer's compliance by using secondary data only inclines in one side point of view. It lacks including tax payer's view in depth manner. Nonetheless, this can have little influence on the validity of the results. Since most of tax payers are not voluntarily disclose their views freely due to lack of knowledge, lack of awareness and other reasons, their exclusion has little impact on the validity of the results. For the reason that tax compliance has a multi-faceted measure

and theoretically, it can be defined by considering three distinct types of compliance such as payment compliance (timely payment of all obligations), filing compliance (the timely filing of any required return), and reporting compliance (the accurate reporting of income and of tax liability), further research could be done to examine in which level the impact of tax audit highly effective on tax compliance is potential avenue. The study concludes that since the contribution of tax audit on improving tax payer's compliance is significant among other measures, revenue authorities of the country and other concerned parties should give more emphasis on the role of tax audit by fulfilling the required staff and qualifications to improve tax payer's compliance and thereby increasing countries revenue through tax.

Recommendations

The regression result shows that probability of audit detection and the numbers of audited files are strongly associated with the improvement of taxpayer's compliance. These result shows that the role of tax audit is significant among other measures. Therefore, tax authorities give much more emphasis on the role of tax audit on improving taxpayer's compliance through fulfilling sufficient tax audit staff.

Scope for further research

This study focuses on the impact of tax audit to increase tax payer's compliance. Further studies must be conducted on other variables which increase tax payer's compliance, like penalty and tax investigation is the potential avenue for further research.

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