Agricultural taxation and economic growth in Ethiopia

Azime A. Hassen

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Abstract

In developing country, the pattern of tax revenues and economic growth across countries has become a significant concern recently. Because the tax policy may apply as one of the tools of fiscal policy for viable and long-term sources of revenue becoming as a source of finance for economic growth. Thus, this study investigated tax responsiveness to changes in gross domestic product in Ethiopia for the period 1981 - 2014. It mainly focused on the agricultural tax revenue components: agricultural income tax and land use fee. Personal income tax and business profit income have also analyzed. An understanding and analysis of the level of sensitivity of the other tax revenue to discretionary policy measures and GDP are essential to the formulation of fiscal policy. The trend of the agricultural income tax and land use fee collection are highly inconsistent. The study revealed that the Ethiopian agricultural income tax and land use fee are not buoyant, implying that the growth of the agricultural sector has no statistically significant impact on agricultural income tax buoyancy. However, personal income tax revenue, business profit revenue, and total direct taxes are relatively responsive to changes in non-agricultural GDP.

Keywords: Tax buoyancy, tax elasticity, Agricultural tax revenue, Direct tax revenue

[a] Ethiopian Civil Service University, Institute of tax and customs administration, Department of Public Finance, Addis Ababa, Ethiopia

[b] Wageningen University, Agricultural Economics and Rural Policy Group, The Netherlands

* Corresponding author. Email: azimeadem@gmail.com, azime.hassen@wur.nl

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1. Introduction

Economic growth and rural development in developing countries require substantial financial resources for infrastructure, education, health and other social services. One of the revenue resources to meet the developmental needs is collected in the form of taxation. In this respect, the sub-Saharan African countries face a challenge to improve the tax collection (Gupta and Tareq, 2008). The rural development largely depends on the agricultural sector contribution to the economy. Thus, the primary thrust of this study is in examining the responsiveness of agricultural taxation to agricultural GDP. Agricultural tax revenues are legal levies imposed on farmers from the income generated by the agricultural activity as well as the fee imposed on the land owned for this purpose.

As pointed out by Feger & Asafu-Adjaye (2014), in order to advance development, governments are required to spend more on public services, and this can be achieved by improving the tax revenue mobilization. In another study by Besley and Ghatak (2006), the different public goods such as availability of clean drinking water, sewage disposal, transportations, health care, and primary and secondary schools are the necessity for well-being as well as an input for increasing the productivity. Even though, the main purpose of taxation is financing public goods and services, the tax policy should operate by certain fiscal principles.

Tanzi & Zee (2000) emphasized that a tax system should be guided by the equity principle that stipulates that taxpayers should only pay what is deemed to be their fair share of taxes. Additionally, tax administration should have certain efficiency objectives whereby government collects sufficient revenue to carry out welfare and development goals. Therefore, in the design of a tax system, it is important that the equity principle and efficiency objectives do not come in direct conflict with each other.

The tax revenue responsiveness to the changes in the economic activity of the country affects the revenue mobilization effort. This response of tax revenues to changes within the GDP is measured by tax elasticity and tax buoyancy. The tax elasticity measures the extent to which a tax structure generates revenues in response to increases in taxpayer income without a change in statutory tax rates (Craig and Heins, 1980, Bunescu and Comaniciu, 2013). Tax revenues are therefore expected to rise if the economy grows, which is known as tax buoyancy: the level of estimation how far the tax revenues react

with changes in GDP. The tax buoyancy measures can be used to assess the efficiency of a given tax system regarding its revenue generation capacity (Jenkins et al., 2000). Knowing this measure is important in decision making for the fiscal policy of a country because it allows us to determine the evolution of the tax revenue collected by the government (Bunescu and Comaniciu, 2013, Moreno and Maita, 2014). Hence, tax buoyancy is a valuable analytical tool for analyzing tax policy, as well as, examining the composition of a tax system.

As agricultural GDP rises, there is a question to examine whether the agricultural tax revenues rises or not? This question can be answered by measuring the agricultural tax buoyancy. It is an overall reaction of tax revenue to changes in agricultural GDP and discretionary changes in tax policy over time. It is the measure of how tax revenues vary with changes in GDP. In theory, tax revenues are said to increase with economic growth based on the assumption that tax bases grow as GDP increases (Milwood, 2011). The growth of the revenue during a particular fiscal year may occur either due to the effect of the tax policy change measures or it is as a result of natural increase in the tax revenues because of a rise in GDP.

Therefore, the objective of this study is mainly to analyze the responsiveness of agricultural tax revenue and other tax to the changes in economic growth in Ethiopia. More specifically, this research has the following specific objectives:

1. To analyze and measure the responsiveness of agricultural income tax and land use fee to the agricultural GDP.
2. To investigate the responsiveness of personal income tax and business income tax to the non-agricultural GDP

The next section of the paper discusses an overview of the tax structure in Ethiopia briefly. In section 3, a conceptual model is structured and formulated. Then data and methodology are presented in section 4. The results are discussed in Section 5. The paper concludes with a summary.

2. An overview of tax structure in Ethiopia

In this period, the Derg regime (1974-1991) has been characterized as an agrarian socialist rule. It was widespread that government controlled all economic spheres including agriculture that meant the state emerged as dominant economic agents in the economy. The land reform declared in 1975 proclamation had nationalized the land, and a step further had taken by distributing equally among the peasants. Consequently, the peasants were forced to establish and organized as peasant associations (Prichard, 2015).

During this period, the agricultural tax had an objective to transfer a substantial portion of the agricultural surplus to the industry. As a result, the government had taxed the agricultural sector heavily. Especially the agricultural income tax rate was progressive and was as high as 89 percent in the highest income bracket. The taxation on exports of the main crop had reached as high as 100 percent of the farm gate price (Rashid et al., 2009).

Because of the change in the government of Ethiopia, the year 1991 had ended with the old policy regime. There was a reform initiated in 1992, which included new legislation for employment income tax, business income tax, rural land and agricultural income tax (Geda and Shimeles, 2005). During the year 1992, the agricultural taxation was not collected because of the transition period and difficulties in collecting from the farmers.

Since 1992, IMF and the World Bank supported Ethiopia to form liberalization and improve Structural Adjustment Programs (SAPs) to control the internal and external imbalances of the economy. The government had initiated different types of reforms to liberalize the economy. It had undertaken comprehensive tax reforms encompassing most of the principal revenue sources. Reform of the tax system was among the range of liberalization policies that also extended to the monetary policy tools, foreign and domestic trade, production and distribution (Geda and Shimeles, 2005).

The major goals of the tax reforms focused on increasing the tax base, improving the tax collection, tax incentives for the private sector, as well as dealt with the equity of taxation.

Current agricultural tax structure in Ethiopia

The Ethiopian tax system consists of direct and indirect taxes. The direct tax categories include agricultural income, land use fee, personal income, rental income, business profit, interest income and capital gain tax. So the smallholder farmers' burden of the tax is from agriculture income tax and land use fee. The indirect taxes includes such as VAT, turnover tax, excises, stamp duties, customs duties, and export taxes.

Smallholder farmers in Ethiopia depend on small acres of land that is owned or rented to generate their income. The term "agricultural taxation" as used in this study includes only taxes paid by the farmers.

The 1978 agricultural income tax was amended in 1995 and 1997. Moreover, annual revenues exceeding Birr 1,200 is subject to a progressive tax rate. Agricultural income tax assessment imposed by Regional states with the provision of the constitution and wide ranging from 5%-40%. The agricultural income taxation is based on the size of land holding rather than the amount of annual agricultural production. In the Oromia Regional State (the largest and most populous region in Ethiopia) initially adopted a progressive agricultural income tax system, but replaced this practice with an agricultural income tax system based on the size of landholding, rather than the amount of agricultural produce(ONRS, 2002, ONRS, 2005).

Agricultural income tax is one of the most difficult features of income taxation in general. In most developing countries, governments impose taxes on agricultural income, but it is hard to determine the income of smallholder farmers and to reach the income earners. These difficulties are due to the high number of small units of income generation, the absence of accounting procedures suited to income taxation, the fluctuating nature of agricultural productivity and profits, and low level of education.

The agricultural income tax rate, exemption limits, and assessment slightly differ among regions. Each region levying the tax at present has its statute with specific provisions for determining the taxable income.

Land use fee

In principle, relatively the land taxes are less complex on agricultural income tax. Because to assess the land tax it requires the total area of the land, its location and type of land grade that shows suitability for irrigation, land fertility and rural transportation for a market. This

information, as Newbery (1987) suggested, it might not be too costly to collect. Based on this information, a simple presumptive tax structure could be possible to design for land tax(Sarris, 1994).

The smallholder farmers could decrease the burden of the land use fee from their expenditure budget by improving and enhancing the productivity of the farmland. It may apply based on discriminate tax rate and by holding equitable factors for production to tax less for the most productive than the least productive farmers (Deininger, 2003).

According to Bird and Slack (2002), land taxes are based on the property value tax that could improve the financing of decentralized resource mobilization that would help development oriented programs in rural areas and municipalities. According to the amended proclamation number 77/1997 of income tax for land use and agricultural activities, the smallholder farmers in the regional states are taxed Birr 10 for the first hectare and Birr 7.5 for each extra half hectare (Geda and Shimeles, 2005). In some regions, the areas of land and the land classification system that is based on relative soil fertility estimates determine the level of taxation. During 2004 to 2014 the total rural area cultivated are expanded for agricultural purpose increased by 2.7 percent per year and the number of smallholder farmers rose by 3.8 percent. The total agricultural output level also increased.(Moller, 2015, Bachewe et al., 2015).

Agricultural Tax Revenue Growth

In macroeconomic terms, the level of tax revenue is measured relative to its Gross Domestic Product (GDP). Measuring the tax ratio on its relative GDP compares the level of taxes collected on the tax bases. So this helps to evaluate the tax performance for the given tax base. Evidently, developing countries have fewer tax ratios to GDP when compared to developed countries. According to Besley and Persson (2014), developing countries collect taxes 10 to 20 percent of GDP, whereas developed countries on average raise around 40 percent of GDP. In this connection, Ethiopia's tax revenue against its GDP remains low. Despite the government's tax revenue mobilization efforts, the total tax revenue-to-GDP ratio is 11.4 percent in 2009/10 and with some small fluctuation, it rose to 11.7 percent in 2013/14.

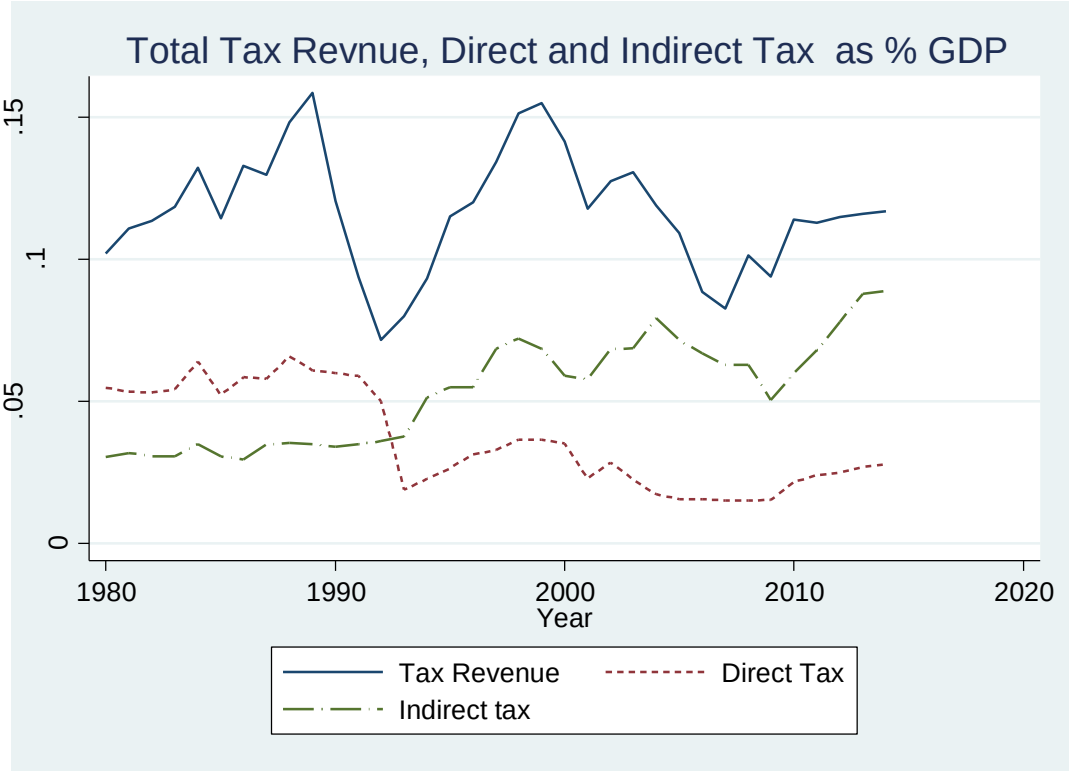

Figure 1: Total tax revenue, Direct and Indirect tax as shares of GDP

Although direct taxes rose from 0.02 in 2009/10 to 0.022 in 2013/14, figure 1 indicates that the ratio of direct taxes to GDP steadily declined. The indirect tax revenues are twice as high as the direct tax in most years, and figure 1 shows that the ratio of indirect taxes to GDP has steadily increased. This value is in line with Feger and Asafu-Adjaye (2014), who find the tax structure in Sub-Sahara Africa (SSA) is skewed towards indirect taxes because the existing structural, institutional and policy characteristics in these countries are not conducive to the collection of direct taxes. It is argued that indirect taxes be less sensitive to these influences; hence, they can be collected with little effort and are relatively easy to administer (Khan, 2001).

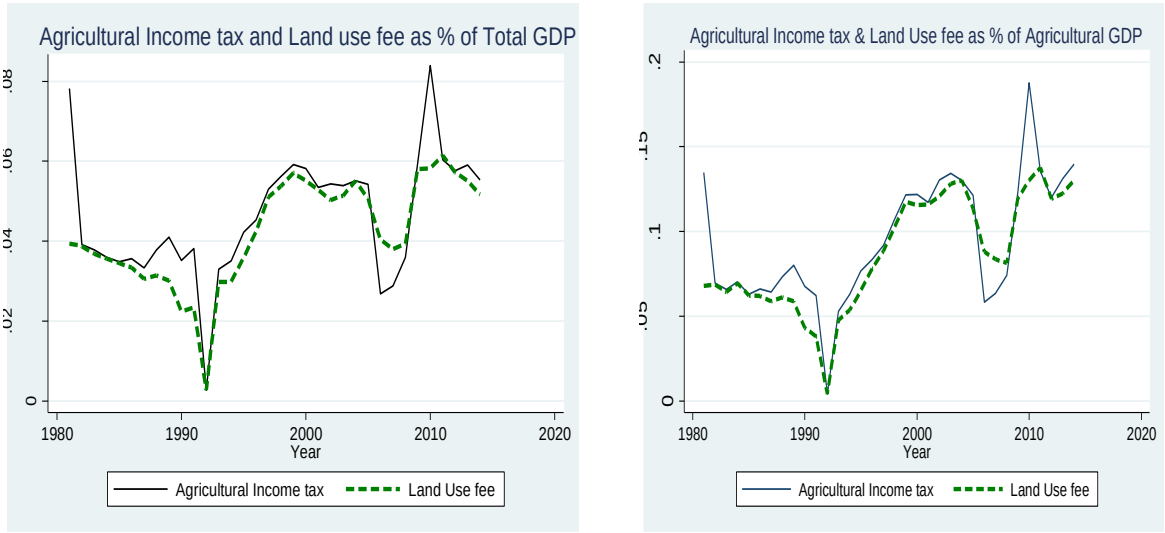

Figure 2: Agricultural tax revenue as shares of total GDP and Agricultural GDP

As depicted in Figure 2, agricultural tax revenue series shows a decline in revenue until 1992. Because of the change of regime during 1991/1992, there is no assessment of agricultural tax revenue. Also, it shows that the tax ratio has fluctuated consistently in the last two decades in Ethiopia. In fact, the tax ratio trend is not stable implying inconsistency in tax performance that could be due to fluctuations in GDP.

According to Feger and Asafu-Adjaye (2014), to date, total tax revenue collection in sub-Sahara African (SSA) countries has only averaged about 15percent of GDP. However, in the case of Ethiopia, it is 11.5percent, which is still below SSA average amount. Moreover, the agricultural income tax collection and its revenue efficiency are not as broad-based as it should be. The tax administration capacity and efficiency may have attributed to less progress in spreading out the agricultural tax income base. In 2003/04, the agricultural income tax revenue was 0.13percent of agricultural GDP (0.06 percent of the total GDP). It has dropped to 0.07percent of agricultural GDP in 2007/08 (0.03 percent of total GDP), but it picked up to 0.13percent of agricultural GDP (0.08percent of the total GDP) in the 2010/11 fiscal year.

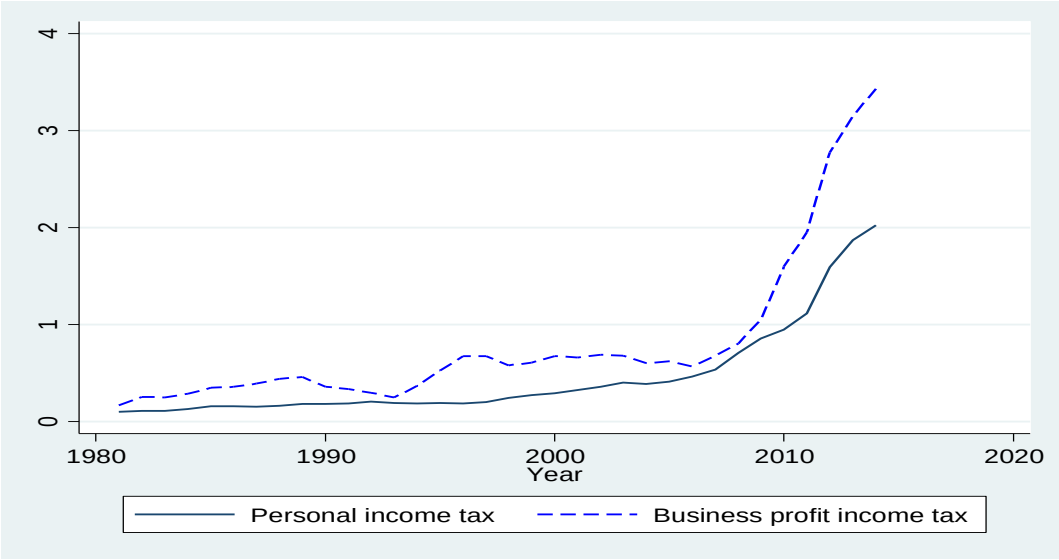

Figure 3: Personal Income tax and Business profit income tax revenue as shares of total GDP

Though agriculture remains the mainstay of the Ethiopian economy regarding of employment and its contribution to GDP, its contribution to the total tax revenue collection is below one percent. Figur 3 shows the personal income tax and business profit tax shares to GDP from 1981 to 2014. In 1981, the personal Income tax revenue share was around 0.1 percent of the GDP, and its share had grown to 2 percent of GDP in 2014. Also, the Business profit income tax is fluctuating but still slightly higher than the personal income tax until 2005. However, after this period, it moderately increased, and its contribution reached to 3.5 percent share of GDP.

3. Conceptual Model

The tax buoyancy and tax elasticity concepts measure the response of tax revenue to changes in income. These concepts are required to investigate for sub-Saharan African countries like Ethiopia because of its due importance where the tax collection may not be efficient as its potential and where it is possible for many individuals not to pay the required taxes (Howard et al., 2009). A tax is buoyant if revenue measures increase by the excess of one percent for a one percent increase in the GDP or national income (McCluskey and Trinh, 2013, Creedy and Gemmell, 2008). A tax buoyancy that is more than one percent would show a tax increment by more proportionate than GDP, and in turn showing the potential leading to more revenue.

The difference between elasticity and buoyancy measures is the inclusion and exclusion of discretionary changes in tax policy. Therefore, tax buoyancy that includes the discretionary changes is a measure of the efficiency of the tax bases and the soundness of tax policy changes regarding the revenue collection and mobilization.

According to Haughton (1998) tax buoyancy (*TB*) is defined as the percentage change in tax revenue to the percentage change base observed.

$$TB = \%\Delta Revenue / \%\Delta base \qquad (1)$$

The base is taken to be the proxy for the tax base, and the revenue could refer the different components of the total tax or individual.

In estimating the coefficient of buoyancy, no attempt is made to control for discretionary changes in the tax policy and administration. Discretionary tax measures referred to the legal changes in the tax rates, tax bases, tax allowances and credits, and of administrative tax efficiency. Consequently, buoyancy reflects both discretionary changes and anticipated revenue growth. It helps to investigate whether the growth of the agricultural sector has an impact on tax revenue compared to movements in gross domestic product. If a tax is elastic, a one percent increase in GDP results in a greater than one percent increase in revenue from the tax, holding constant discretionary tax changes.

Different studies have investigated the impact of GDP on the sensitivity of tax revenue. Among these, Osoro (1993) concluded that the main categories of taxes in Tanzania, elasticities are found to be less than one percent. However, in comparison to buoyancy due to its discretionary changes, it becomes higher than elasticity coefficient. Mawia and Nzomoi (2013) evaluated the tax buoyancy of different taxes in Kenya and found that tax bases did not respond well to economic changes with an exception of excise duty. Muhammad & Ahmed (2010) analyzed 25 countries for the period of 1998-2008 and applied a pooled least squares analysis method. Their results showed that the growth of the agricultural sector has little impact on the efficiency of tax revenue, as well as less responsive to revenue mobilization in the case of developing countries. It is mainly due to difficulties in assessing the income generated, the low income that may not be taxed or under taxed. In other studies, it showed that agricultural share contribution has demonstrated the consistently negative impact on revenue collection, but the tax revenue increased with the trade share (Prichard, 2015). Leuthold (1991) studied in eight African countries by measuring the tax effort for the

period of 1973-1981 in a panel data using OLS estimation. The author argued that agricultural share would affect the estimation coefficient of the direct and indirect tax revenues negatively.

4. Methodology and Data Collection

In estimating the coefficient of the tax buoyancy, annual time-series data were collected from 1981 to 2013. The data comprises of Agricultural GDP, Non-agricultural GDP, aggregated agricultural income taxes, aggregated land tax, personal income tax, business profit income tax, aggregated direct tax and consumer price index. These data is obtained from Ministry of Finance and Economic Development (MOFED) and World Development Indicators database (WDI).

The agricultural income tax revenues, land tax revenue, personal income tax, business profit income tax, aggregated direct tax were converted to their real values by dividing their nominal values with the consumer price index (CPI). The CPI helps to smooth and avoid biased results that could have resulted from inflation. The CPI is used because it falls on the expenditure side of the GDP equation. According to Triplett (2001), the CPI is more preferably shows a cost-of-living index and avails an appropriate guidance for measuring consumer inflation. Hence, it is best used in deflating tax revenues.

In this study, the focus was on two types of agricultural taxes, i.e. agricultural income tax (*AgIT*) and agricultural land tax or land use fee (*AgLT*):

$$log\ Ag\ IT\ = a_0\ +\ a_1 \log Agr\ GDP + \varepsilon \qquad (2)$$

$$log\ Ag\ LT\ = a_0\ +\ a_1 \log Agr\ GDP + \varepsilon \qquad (3)$$

Where *Agr GDP* is agricultural gross domestic product, and ε is a stochastic disturbance term. Since the equations are in double log form, the coefficient estimates show tax buoyancy as they measure the percentage response in the agricultural income tax and land use fee variables for a one percent change in the agricultural GDP variable.

Singer (1968) developed one of the methods how to estimate the tax elasticity coefficient using a dummy variable technique. This method uses dummy variables for tax policy shifts

occurred during a particular period in the tax system. From equation (2), the functional tax form can also be expressed as:

$$\log_i(AgIT) = log\alpha + \beta \log(AgrGDP)_i + \sum \theta_i D_i + \varepsilon_i \qquad (4)$$

Where,

α= Constant;

β= Elasticity coefficient;

θ_i = Impact or coefficient of the discretionary change; and

D_i = dummy variable as a proxy for the ith discretionary tax measures (DTM) taken during the period under review. The summation sign in equation creates room for the possibility of multiple changes in the tax system during the study period.

We are introducing a dummy variable for a significant tax policy change in administrative reform in 1992. The decade of the 1990s differs from the previous period in the application of more liberal policy. During the second half of the 1990s, there was an implementation of the tax reform. Since 1993, the tariff structure has improved extensively, and more proclamations and regulations revised and streamline the old tax system.

5. Results

Initially, the agricultural GDP fluctuated steadily but followed by a period with the quick rise. Since 1992 the new regime has introduced various changes to the tax system, and therefore, it is expected that real agricultural GDP is non-stationary. As such, to have meaningful results, the trend model with options of Dickey-Fuller that includes a constant and a time trend in the Augmented Dickey-Fuller regression are applied.

The results of the unit root tests are based on the Augmented Dickey-Fuller (ADF), Kwiatkowski-Phillips-Schmidt-Shin (KPSS) and Phillips-Perron (PP) unit root tests.

The result indicates the real Agricultural GDP has exhibited unit roots at different critical levels. The real agricultural GDP is found stationary after differencing once; implying that the variable is integrated of order one. However, the real agricultural income tax, the real

land use fee, and the total agricultural tax variables were found to be stationary. The unit root results are presented in Appendix I.

Therefore, the real agricultural income tax and real land use fee, as well as the total agricultural tax series, are integrated of order 0.After differencing the real agricultural GDP, it was used as dependent variable in the ordinary least squares procedure (OLS). The first difference of logarithmic transformed Real agricultural GDP (D.ln_RealAGDP) is employed in the model.

It is regressed on an independent variable time (t), which was assigned numerical values 1 for the first year, 2 for the second year and so forth. A dummy d1992 was assigned for the year 1992 when the real economic activity for assessing the agricultural income tax and land use fee was substantially slower than the historical trend.

The results suggest that Agricultural GDP has some significant effect on agricultural income tax. In fact, it is estimated that the revenue buoyancy is -1.13 with significantly different from zero at the 10 percent level. It implies that a 1percent increase in the Agri GDP is associated with a 1.13 percent decrease in the Agri Income tax. The tests for significance at 1 percent level of the dummy coefficients d1992 permit us to identify the importance of the period. The R^2 value is relatively high suggesting that the relationship is rather strong.

Also, other results suggest that agricultural GDP has no statistically significant influence on agricultural Land use fee and total agricultural tax. A further analysis has been done in evaluating tax elasticity by including a dummy variable for a policy change since 1992.

The abbreviations for the tables used are as follows:

D.ln_RealAGDP: the first differenced log of real agricultural GDP.

d1992: a dummy variable to shows for the year 1992 when the change of government and no collection of tax revenue.

Dpolicy: a dummy variable to capture policy changes due to the tax reform

t: time trend t

Table1. Estimates of tax buoyancy using OLS Regression for agricultural income tax, land use fee, and total agricultural tax

	Agricultural Income tax	Agricultural Land use fee	Total Agricultural Tax
D.ln_RealAGDP	-1.126	-0.716	-0.645
	(1.83)*	(1.16)	(1.06)
d1992	-3.160	-3.038	-3.103
	(10.57)***	(10.11)***	(10.54)***
_cons	4.912	4.826	5.571
	(85.42)***	(83.55)***	(98.39)***
R^2	0.79	0.77	0.79
N	33	33	33
* p<0.1; ** p<0.05; *** p<0.01			

The basic model is extended by including time trend t and a dummy variable to capture policy changes reflected the tax reform for the period 1992 to 2014 (Dpolicy). The elasticity of agricultural GDP is estimated to be -1.16, implying that a 1percent increase in agricultural GDP is associated with a decrease in 1.16percent change in Agricultural Income tax. On the other hand, Agricultural GDP has no statistically significant effect on agricultural Land use fee and total agricultural tax. This is perhaps attributed as the economy grew; agriculture accounted for a decreasing share of both GDP and employment.

Table 2. Estimate of tax elasticity using OLS Regression for Agricultural income tax, land use fee, and total agricultural tax

	Agricultural Income tax	Agricultural Land use fee	Total Agricultural Tax
D.ln_RealAGDP	-1.156	-0.918	-0.833
	(1.89)*	(1.53)	(1.45)
d1992	-3.379	-3.249	-3.335
	(11.48)***	(11.21)***	(12.05)***
Dpolicy	-0.439	-0.459	-0.498
	(2.48)**	(2.63)**	(2.99)***
t	0.016	0.021	0.022
	(1.87)*	(2.54)**	(2.78)***
_cons	4.940	4.778	5.533
	(47.43)***	(46.59)***	(56.49)***
R^2	0.83	0.82	0.84
N	33	33	33
* p<0.1; ** p<0.05; *** p<0.01			

The value in parenthesis shows the t-value, and the p-values are in asterisks displays the significance level.

The coefficient of time is statistically significant at 5 percent for land use fee and significant for total agricultural tax at 1 percent; its t-value is approximately 2.54 and 2.78 respectively. However, the coefficient of time is *not* statistically significant for agricultural income tax at 5percent significant level; its t-value is approximately 1.87. However, this supports the observation the agricultural income tax is not only driven by the agricultural GDP, but by other internal developments in the country and on improving the tax administration. Also, it shows that the informational requirements of land taxation affect the design of taxes in the rural sector. Thus, the case for agriculture productivity as a focus of economic growth strategies must rely on identifying a set of inter-linkages through which agricultural growth contributes to the growth revenue sources for the development rural public services in the rural Ethiopian economy.

Table 3: Estimates of Buoyancy and elasticity for agricultural tax

	Buoyancy	Elasticity
Agricultural Income tax	-1.12	-1.15
Land use fee	-0.71	-0.91
Total agricultural tax	-0.64	-0.83

Under the category of direct tax, the non-agricultural tax revenue variables, which are the real personal income tax and business profit income tax, as well as the total direct tax series were analyzed. As the first step of a more detailed examination of the data properties and the final model specification, the stationarity property of the series has been analyzed using the Augmented Dickey-Fuller (ADF), KPSS and Phillips-Perron (PP) unit root tests, the results are Appendix II.

It is concluded that all series are I(1) and required to test for cointegration to establish the relationship between the personal income tax, business income tax with the non-agricultural GDP. Upon realizing the existence of a unique cointegrating vector, the structural vector autoregressive (SVAR) model was used to investigate and estimate the elasticity and buoyancy in the short-run between the variables. The AIC was used to select the optimum lag length of the SVAR models. Based on the SVAR estimation, tax buoyancy, and elasticity results are reported are as follows (for detailed refer to Appendix III).

Table 4: Estimates of Buoyancy and elasticity for Personal Income Tax and Business Income tax

	Buoyancy	Elasticity
Personal Income tax	0.08	0.068
Business profit income tax	0.12	0.11
Total Direct tax	0.13	0.118

Referring to Table 4, a 1percent increase in non-agricultural GDP leads to a 0.08 percent increase in personal income tax in the current period. When a policy change has been included as a dummy variable, a 1percent increase in non-agricultural GDP leads to about 0.07percent increase in personal income tax in the current period.

It was also observed that a 1percent increase in non-agricultural GDP leads to a 0.12percent increase in business profit income tax in the current period. When a policy change has been included as a dummy variable, a 1percent increase in non-agricultural GDP leads to a 0.11percent increase in business profit income tax in the current period. Given the progressive nature of personal income tax and business profit income tax, it was expected elasticity would be greater than one.

Furthermore, a 1percent increase in non-agricultural GDP leads to a 0.13percent increase in total direct tax in the current period. When a policy change has been included as a dummy variable, a 1percent increase in non-agricultural GDP leads to about 0.12percent increase in direct tax in the current period.

The elasticity coefficient was not much lower than the buoyancy for all variables; implying that the discretionary measures did not significantly impacted the respective revenue. It can easily be observed that the discretionary changes to personal income tax and business profit income tax have little contribution to the growth in overall direct tax revenue.

6. Conclusions

The study attempted to analyze and measure the responsiveness of agricultural tax to the economic growth in Ethiopia. The agricultural tax buoyancy measures the growth in

agricultural tax revenues as a ratio of the growth in agricultural GDP. The study concludes that growth in the agricultural GDP does not have a significant impact on the growth of agricultural income tax collection. The agricultural share has an adverse influence on revenue collection consistently, but non-agricultural GDP has shown positive impact and tax revenue increased by personal income and business profit. In general, a tax buoyancy or elasticity coefficient that is lower than one may indicate to issues related to the structure of the tax, administration or compliance in the tax system. Based on these findings, the study recommends that reviewing the tax system is crucial as the economic structure changes. The tax policy measures should also be adopted to increase the tax base in which the growing agricultural sector of the smallholder farmers has to be put properly under the tax administration of the federal government. Also, there is a need to improve the tax administration continuously so that tax evasion and other malpractices may be tackled, as well as, to consider how to minimize the cost tax collection efficiently.

The sensitivity response of revenue to changes in the tax base for personal income tax and business profit income tax was estimated to be less than one. So it shows that the power of the economy to extend revenue on its remains fairly weak; requiring discretionary measures coupled with other measures for the shortfalls in revenue. The low elasticity could be as a result of the various reasons that existed over the periods.

It would be interesting to expand the analysis to tax elasticity, which corrects revenue performance for changes in tax policy parameters. For example, the observable cost of insecurity of land rights is that it reduces farmers' investments in land and land's value as collateral. The insecurity of land rights affects the farmers to invest less in both land development and capital invested for long term. It requires, however, more detailed information about underlying tax morals and their revenue impacts.

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