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# ***The Effect of Tax Revenue Mobilization on the Economic Growth of Ethiopia, by Amina Ahmed<sup>1</sup>***

## **Abstract**

*A study on the long run and short run effects of tax revenue mobilization on the economic growth of Ethiopia was conducted using an explanatory research design and mixed research approach. Secondary data from world development indicators spanning from 1990 to 2021 were analyzed using Auto regressive distributive lag (ARDL). The study found no long run causal relationship between taxation, different tax classifications, and economic growth in Ethiopia during the study period. However, in the short run, the current period of tax revenue had a positive and significant impact on economic growth, while a one-period lag in tax revenue had a negative and significant effect. Specifically, the one-period lag in direct tax negatively affected economic growth. Indirect tax did not show a significant effect in both the short run and long run. Based on these findings, the study recommends that the Ethiopian government and the Ministry of Revenues review the tax system and implement mechanisms to shift tax revenue sources from direct tax to indirect tax. This can be achieved by introducing strong tax collection methods and emphasizing the collection of domestic indirect tax.*

*Keyword: direct tax; tax revenue mobilization; indirect tax; Ethiopia; tax revenue per GDP*

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## **Background of the Study**

The aim of the fiscal policy of any country, no matter the level of development, is to ensure economic growth and assure sustainable development. To play the main function of the state as well as to achieve the growth aim, governments use spending as the main tool of public finance policy (Macek, 2015). Direct tax refers to taxes that are levied on income, wealth, and capital, whether personal or corporate. Indirect taxation comprises taxes that are not levied on income or property. It includes VAT, excise duties, import levies and energy and other environmental taxes. The fundamental principle in international taxation is that indirect taxes on consumption are charged in the country in which the goods and services are consumed. Consumers bear the burden of these taxes, in principle, as part of the market price of the goods or services purchased (Birhanu, 2018).

Ethiopia has been reforming its tax system for over 20 years. Comprehensive tax reforms started in 2002/03 as an integral part of economic reforms. The main aim of the tax reforms was to mobilize tax revenues focusing specially on increasing the share of direct tax contribution to total tax revenues to ensure fiscal sustainability and to reduce dependency on foreign trade tax which is volatile because of free trade agreements and regional integration from long-term perspective (Daba & Mishra, 2014). Ethiopia raises relatively less revenue than regional peer economies which reflects lower revenues from domestic direct taxes and from taxes on goods and services. Ethiopia raises more revenue relatively from trade tax. This showed the high dependence of Ethiopian tax revenue on trade taxes as compared to the peer economies. This may pose difficulties given moves to liberalize and increase trade in Africa by the implementation of African Continent Free Trade Area (AfCFTA) and other regional arrangements like COMESA. These arrangements could be implemented by reducing barriers to trade, such as high import duty rates (Harris & Seid, 2021).

Different studies have been conducted to analyze the effect of taxation on the economic growth of Ethiopia. For example, Adela (2017) found positive and significant long run and short run effects of both direct tax and indirect tax on economic growth. Amado (2018) also found a positive and significant effect of tax revenue mobilization on economic growth. Kader (2021) observed that tax revenue mobilization had a positive and significant impact on economic

growth in both the long run and short run. These studies contribute to understanding the relationship between taxation and economic growth, considering different tax classifications, and using various proxies for economic growth like real GDP and GDP per capita. The main objective of the current study is to analyze the effect of tax revenue and different tax classifications on the economic growth of Ethiopia, addressing the long run and short run effects of tax revenue, direct tax, and indirect tax.

## **Review of Related Literature**

### **Theoretical Review of Literature**

Different theories postulate the causes of economic growth from different perspectives. The following section reviewed the theories related to the nexus of taxation and economic growth.

### **Exogenous Growth Theory**

The Neoclassical Growth Theory is an economic model of growth that outlines how a steady economic growth rates results when three economic forces come into play: labor, capital, and technology. The simplest and most popular version of the Neoclassical Growth Model is pioneered by Solow (1956) and Swan (1956). This theory 'focused on the accumulation of capital as the source of growth. If the level of saving exceeded the sum of depreciation and population growth the capital-labor ratio would rise over time and generate growth in output per capita. Growth could also arise if the productivity of a given stock of capital increased because of technical progress' (Myeles, 2009).

### **The Solow Growth Model**

The Solow growth model introduces the concept of a steady-state and demonstrates that capital accumulation is not sufficient to ensure continuing growth if not matched by technological progress or equal increases in other inputs (Myeles, 2009). This model analyzes the changes in the level of output in an economy over time because of changes in the population growth rate and the savings rate. The study of Gregory et al. (1992) confirmed the higher the rate of saving, the richer the country. The higher the rate of population growth, the poorer the country is. If countries have the same population growth rate, savings rate, and capital depreciation rate, then they have the same steady state, so they will converge.

### **The Augmented Solow Model**

While the study of Gregory et al. (1992) confirmed that although the Solow model accurately predicts the direction of the effect of saving and population growth it does not predict the magnitudes. As a result, they augment the Solow model by incorporating accumulation of human and physical capital since omitting these variables from the Solow model is believed by the authors a cause for biases in the estimation of coefficients of saving and population growth in the Solow model. As a result, the study included a proxy for human capital accumulation and found a correlation with saving and population growth. In addition to this, this study confirms that once differences in saving and population growth rate are accounted for, there is a convergence at roughly the rate the Solow model predicts. Finally, the model predicts that poor countries should tend to have a higher rate of return to physical and human capital.

### **Endogenous Growth Theory**

The Endogenous Growth Theory states that economic growth is generated internally in the economy, that is, through endogenous forces and not through exogenous ones. The theory contrasts with the neoclassical growth model, which claims that external factors such as technological progress are the main sources of economic growth. The theory is built on the idea

that improvements in innovation, knowledge, and human capital lead to increased productivity, positively affecting the economic outlook.

### Empirical Literature Review

The study conducted by Bakari et al. (2020) found no significant long-term relationship between domestic investment, taxation, and economic growth in Germany. Murat et al. (2015) discovered a long-run relationship between GNP and direct and indirect tax revenue in Turkey, while Ozpence & Mercan (2020) observed a negative impact of tax burden on economic growth in Turkey. Iriqat & Anabtawi (2016) found a causal relationship between tax revenues and GDP components in the Palestinian economy. Ahmad et al. (2018) reported a negative and significant long-run effect of indirect tax on the economic growth of Pakistan. Ilaboya & Mgbame (2012) found an insignificant relationship between indirect tax and economic growth in Nigeria but noted a positive impact of the total tax-to-revenue ratio on the economy. Umoru & Anyiwe (2013) observed a positive effect of direct tax on the economic growth of Nigeria, while Ogundana et al. (2017) identified a significant impact of indirect tax on economic growth in Nigeria. Adela (2017) and Amado (2018) found positive and significant effects of direct and indirect tax on the economic growth of Ethiopia, and Kader (2021) confirmed the positive impact of tax revenue mobilization on the economic growth of Ethiopia.

The current study contributes to existing knowledge by examining the impact of taxation on Ethiopia's economic growth using time series data from 1990 to 2021. It utilizes the ARDL estimation technique to analyze the long run and short run effects of tax revenue, direct tax revenue, and indirect tax revenue on Ethiopia's economic growth.

### Research Design and Methodology

The study adopted an explanatory research design and used a quantitative research approach to examine the causal relationship between economic growth and tax revenue mobilization in Ethiopia. Secondary data from the World Development Indicators (WDI) were collected for the period 1990 to 2021. Regression analysis was conducted using the time series data, and the Autoregressive Distributed Lag (ARDL) Model was employed to analyze the short-run and long-run effects of various tax revenue variables (tax revenue, direct tax revenue, domestic indirect tax revenue, and international indirect tax revenue) on Ethiopia's economic growth. The ARDL model was chosen as it allows for simultaneous examination of both long-run and short-run effects and is suitable for small samples. Additionally, ARDL is appropriate for variables with different orders of integration, whether they are stationary (I(0)), non-stationary (I(1)), or a combination of both.

### Model specification

To analyze the effect of tax revenue on economic growth of Ethiopia, the following general estimation model was applied.

$$g = \alpha + \phi T_t + \varepsilon_t \dots \dots \dots \text{eq (1)}$$

Where  $g$ ,  $T_t$ , represent growth rate and tax revenue respectively and  $\varepsilon_t$  error term,  $t$  represents the time.

Tax revenue is classified broadly into direct tax and indirect tax. Since these taxes are expected to differently affect the economic growth of a country, the following model was used to account the effect of direct tax and indirect tax revenue on economic growth of Ethiopia. Accordingly, eq (1) was modified as

$$g = \alpha + \phi DT_t + \delta IT_t + \varepsilon_t \dots \dots \dots \text{eq (2)}$$

Where  $g$ ,  $DT$  and  $IT$  refers to economic growth, direct tax revenue, indirect tax revenue mobilization respectively.  $t$  refers to the time ranging from 1990 to 2021 and  $\varepsilon_t$  Is the error term. Economic growth is proxied by GDP per capita income while the tax revenue, direct tax revenue, domestic indirect tax as well as international tax are measured as ratio of GDP.

## Results and Discussion

### Results

To analyze the effect of tax revenue and its classification on the economic growth of Ethiopia ARDL model was employed. The following section discussed the descriptive and regression result of the study.

Table 1: Descriptive Statistics of Variables Under Study

| Variable | Obs | Mean.   | Std. Dev. | Min     | Max     |
|----------|-----|---------|-----------|---------|---------|
| GDPPC    | 32  | 423.828 | 206.02    | 218.102 | 852.006 |
| TR       | 32  | 9.95    | 1.954     | 5.23    | 12.734  |
| DTR      | 32  | 3.426   | 1.036     | .719    | 4.652   |
| ITR      | 32  | 6.067   | 2.045     | -.376   | 8.552   |

Source: World Development Indicators, 2022

The GDP per capita is used as a proxy for economic growth in Ethiopia. The average GDP per capita throughout the study period is \$423 USD, with a minimum of \$218 USD and a maximum of \$852 USD. On average, tax revenue contributes around 10% to the GDP, with a minimum contribution of 5% and a maximum contribution of 12%. However, the trend analysis indicates that the proportion of tax revenue to the GDP has been declining steadily since 2015. This shows that Ethiopia's tax revenue as a share of GDP is relatively low compared to sub-Saharan countries (18%), emerging economies (20%), and developed economies (beyond 30%).

When examining the contribution of different types of taxation to the GDP, on average, 3.4% comes from direct tax and 6.06% comes from indirect tax. The trend analysis also reveals a mixed trend, with some periods showing an increment in the contribution of domestic direct tax, particularly from 2014 onwards. The GDP per capita, which serves as a proxy for economic growth, shows an increasing trend over time.

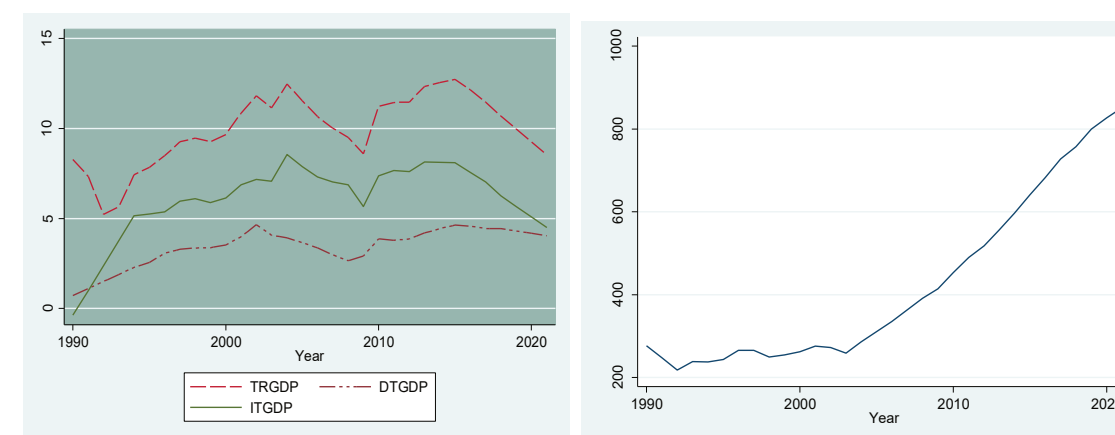


Figure 1 trend analysis of tax per GDP and its components and GDPPC of Ethiopia from 1990 to 2021. Source: world development indicators, 2022

### Stationarity (Unit Root) Test

By testing the stationarity of the variables of interest, one can decide the estimation technique for the data on hand. If all the variables are stationary or are I (0), OLS can model the data. If all the series are integrated of the same order but are not co-integrated still OLS can be used. When the series is I (1) and they are co-integrated, both the long-run and short-run relationship of the variables can be estimated by using the OLS and the ECM, respectively. Autoregressive Distributed Lag (ARDL) model is used in modeling non-stationary time series data. Besides this, it has the following advantages:

1. It can be used in a mixture of I (0) and I (1)
2. It involves a single equation to model the long-run and short-run relationship.
3. Different variables could be assigned different lag-length.

To decide the proper model for analyzing the data on hand, a unit root test was conducted. As shown in the table below (see for the stationary test result at appendix B), the variables are combination of both I (0) and I (1) as well none of the variables are of I (2) which leads to the appropriateness of the ARDL model for the data.

Table 2: Unit Root Test Summary

| Variables | P value At Level intercept | P value at level, trend, and intercept | P value first difference, intercept | P value first difference, trend, and intercept | Integration order |
|-----------|----------------------------|--|-------------------------------------|--|-------------------|
| LNDT/GDP  | 0.1384                     | 0.2542                                 | 0.0195                              | 0.0721   | I (1)             |
| LNGDPPC   | 0.9903                     | 0.3724                                 | 0.0019                              | 0.0058   | I (1)             |
| LNIT/GDP  | 0.0121                     | 0.3971                                 | 0.0001                              | 0.0002   | I (0)             |
| TRP/GDP   | 0.2370                     | 0.7729                                 | 0.0016                              | 0.0072   | I (1)             |

Source: Author's compilation

### Optimal Lag Length Selection

To estimate the model, it is necessary to select the optimal lag length for both the dependent and independent variables. There are different criteria that can be used to select the optimal lag length. These include Hannan and Quinn Information criterion (HQIC), Schwarz's Bayesian information criterion (SBIC), Akaike's information criterion (AIC), and Final Prediction Error (FPE). Based on Akaike's information criterion (AIC) criterion selection optimal lag length for models 1 and 2 are selected. The result of the lag length selection is presented in Table 3 below.

Table 3: Summary of the Optimal Lag Length Selection Result

| Variable                   | Criteria used | Optimal lag length selected |
|----------------------------|---------------|-----------------------------|
| Log of GDP per capita (DV) | AIC           | 1                           |
| Log tax revenue            | AIC           | 1                           |
| Log direct tax revenue     | AIC           | 2                           |
| Log indirect tax revenue   | AIC           | 1                           |

Source: compiled from STATA output

### Preliminary Diagnostic Test

Before interpreting the estimation results, it is necessary to conduct preliminary diagnostic tests. The tests conducted include normality, serial autocorrelation, heteroskedasticity, and model misspecification tests. Table 4 provides a summary of the test results for both models. The Jarque-Bera test indicates that the null hypothesis of normality is not rejected, with p-values of 0.827 for model 1 and 0.145 for model 2. The Breusch-Godfrey serial correlation LM test suggests no rejection of the null hypothesis of no serial correlation up to 2 lags, with p-values of 0.1672 for model 1 and 0.118 for model 2. The White's test of heteroskedasticity does not reject the null hypothesis of homoscedasticity, with p-values of 0.311 for model 1 and 0.859 for model 2. The Ramsey RESET test confirms that the models are not misspecified, with p-values of 0.2438 for model 1 and 0.248 for model 2. Based on the p-values of these tests, both models are found to be free from issues of normality, serial autocorrelation, heteroskedasticity, and model misspecification.

Table 4: Summary of Diagnostic Tests for Models 1 & (Model 2) Respectively

| Variable                    | Jarque-Bera   | f-statistic   | f-statistic   | f-statistic  |
|-----------------------------|---------------|---------------|---------------|--------------|
| Normality test              | 0.378 (0.386) |               |               |              |
| Serial autocorrelation test |               | 1.958 (2.444) |               |              |
| Heteroskedasticity test     |               |               | 1.475 (0.415) |              |
| Ramsey RESET test           |               |               |               | 1.434 (1.42) |

Source: Author's compilation

The conducted bounds test for co-integration indicates that there is no long-run relationship between tax revenue mobilization (model 1) or tax structure (model 2) and economic growth, as summarized at the bottom of table 5. Consequently, the results pertaining to the short-run relationship between the dependent and independent variables of interest are presented in Table 5.

The bounds test conducted, as shown in the table above, indicates that there is no long-run relationship between tax revenue, direct tax, indirect tax, and economic growth during the study period. This finding aligns with the neoclassical economic theory, which suggests that taxation has a temporary or short-run effect on economic growth, while exogenous factors play a more significant role in driving long-term growth.

In the short run, the analysis in table 5 reveals that a one-period lag in GDP per capita has a significant positive effect on the current period's economic growth in Ethiopia. Conversely, the total tax revenue per GDP from the previous period exerts a significant negative effect on economic growth, while the current period's tax revenue per GDP has a positive and significant effect. However, two-period lagged GDP per capita and two-period lagged tax revenue per GDP do not have a significant impact on current-year economic growth in Ethiopia.

It should be noted that tax revenue can be generated from various sources, such as direct and indirect taxes. The literature review indicates that different types of taxation can have distinct effects on economic growth, both theoretically and empirically. Direct taxes, which can cause distortions, and indirect taxes, which are non-distortionary, can influence economic growth in different ways.

Table 5: Short Run Coefficients of ARDL Results of Models 1 & 2

| Regressors                 | (model 1: TR)     | (model 2: DT & IT) |
|----------------------------|-------------------|--------------------|
|                            | logGDPPC          | LogGDPPC           |
|                            | ARDL (1,1)        | ARDL (1,2,1)       |
| L.log GDP per capita       | 1.036*** (0.0242) | 1.053*** (0.0241)  |
| Log Tax revenue            | 0.257*** (0.0795) |                    |
| L.log Tax revenue          | -0.183** (0.0854) |                    |
| Log direct tax revenue     |                   | 0.0369 (0.101)     |
| L.log direct tax revenue   |                   | -0.304** (0.138)   |
| L2.log direct tax revenue  |                   | 0.122 (0.0848)     |
| Log Indirect tax revenue   |                   | 0.122 (0.0821)     |
| L.log Indirect tax revenue |                   | 0.0581 (0.0679)    |
| Constant                   | -0.345** (0.129)  | -0.421** (0.161)   |
| Observations               | 31                | 30                 |
| R-squared                  | 0.990             | 0.994              |

Standard errors in parentheses  
 \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

**Pesaran et al (2001) ARDL Bounds Test result, H0: No Levels Relationship**

|                                      |                         |             |             |
|--------------------------------------|-------------------------|-------------|-------------|
| F-statistic                          | 4.680                   | 4.295       |             |
| Critical value for F-statistic (10%) | 4.04 I (0) 4.78 I (1)   | 3.17 I (0)  | 4.14 I (1)  |
| Critical value for F-statistic (5%)  | 4.94 I (0) 5.73 I (1)   | 3.79 I (0)  | 4.85 I (1)  |
| t-statistic                          | 1.476                   | 2.206       |             |
| Critical value for t-statistic (10%) | -2.57 I (0) -2.91 I (1) | -2.57 I (0) | -3.21 I (1) |
| Critical value for t-statistic (5%)  | -2.86 I (0) -3.22 I (1) | -2.86 I (0) | -3.53 I (1) |

Note: the decision rule for the bounds test result of F-statistic and t statistic is accept Ho if F < critical value for I (0) (the lower bound) regressors & reject if F > critical value for I (1) (the upper bound) regressors; Accept if t > critical value for I (0) regressors & reject if t < critical value for I (1) regressors.

Table 5 presents the effects of domestic direct tax, domestic indirect tax, and taxation on international trade on the economic growth of Ethiopia during the specified study period. No long-run relationship was found among these variables. In the short run, a one-period lag in GDP per capita has a positive and significant contribution to the current period's economic growth in Ethiopia. A one-period lag in direct tax per GDP exerts a negative and significant effect on economic growth, while the current period's direct tax per GDP does not have a significant impact. Similarly, the two-period lag in direct tax per GDP and indirect tax does not have a significant effect on the current-year economic growth of the Ethiopian economy.

**Model Stability Test**

In addition, a stability test was conducted for model 1 and model 2. As shown below, the plot of CUSUM (cumulative sum of recursive residuals) and CUSUMSQ (cumulative sum of squares of recursive residuals) of squares result confirmed that the regression coefficients of both models are also stable over the study period.

**Discussion**

The descriptive analysis shows that most of the tax revenue to GDP is raised from international tax followed by domestic direct tax. The domestic indirect tax contributes a negligible

stable over the study period.

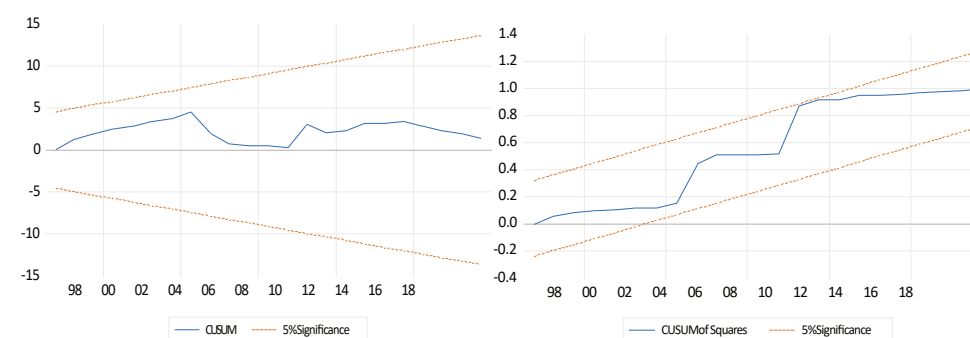


Figure 2: CUSUM plot of Model 1 Figure 3: CUSUMSQ plot of model 1

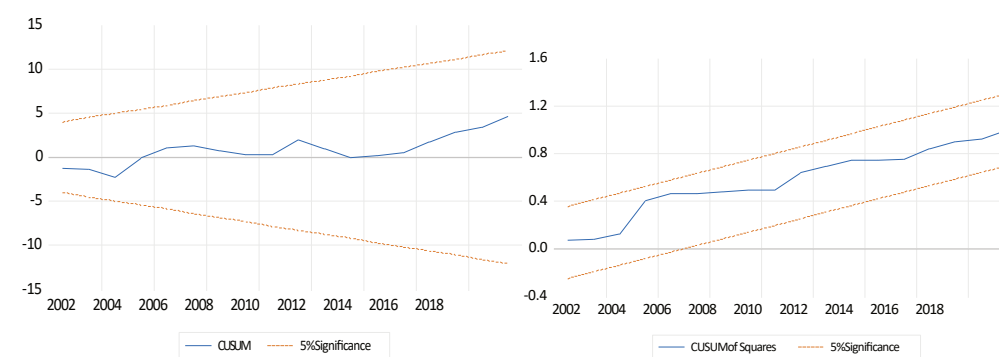


Figure 4: CUSUM plot of the model 2 Figure 5: CUSUMSQ plot of model 2

contribution to the overall tax per GDP of the country throughout the study period. This is not in line with the objectives of the reforms made in 2002 and 2016. The main objectives of the reforms were generally to enhance the domestic tax revenue and decrease the dependence of the economy on the trade tax. Since dependence on international tax may pose difficulties given moves to liberalize and increase trade in Africa by the implementation of African Continent Free Trade Area (AfCFTA) and other regional arrangements like COMESA by which Ethiopia is a part.

The two main theories of economic growth, neoclassical theory and endogenous theory, offer different perspectives on the relationship between taxation and economic growth. According to the neoclassical theory, economic growth is primarily driven by exogenous factors, and internal factors such as taxation have a temporary or short-run effect. In contrast, the endogenous theory suggests that economic growth is the outcome of internal factors within an economy, implying that taxation and other policy variables can have long-term effects on economic growth.

Furthermore, according to the endogenous economic growth theory, taxation is classified into distortionary and non-distortionary taxes. This classification is based on the effect of taxation on the decision of the taxpayer and the overall effect of economic growth. Distortionary taxes include the direct taxes which are directly levied on the income of the taxpayers. Therefore, they can affect the decision of the taxpayer to work, save and invest and are expected to exert negative effect on the economic growth of a state (Ugwunta & Ugwuanyi, 2015).

The non-distortionary tax refers to the indirect tax and mostly to the consumption taxes. These taxes are expected not to alter the decision making of the taxpayer. In addition, if the income generated from such taxes is invested in productive areas could result in economic growth (Myles, 2009).

The study's findings indicate that, during the study period, there is no long-run relationship between tax revenue, different classifications of taxation, and economic growth in Ethiopia. However, in the short run, the current period tax revenue per GDP has a positive and significant effect on Ethiopia's economic growth, while one-period lag tax revenue per GDP exerts a negative and significant impact. These findings align with the neoclassical economic theory. The minimal proportion of taxation to GDP, which is less than 12%, and the fact that most development-related expenditures are not funded by tax revenue could contribute to these results. Similar findings have been observed in various studies conducted in developing countries, particularly in Africa, such as Gbato (2017), Ugwunta & Ugwuanyi (2015), Amado (2018), and Kader (2021).

In the short run, the one-period lag of direct tax per GDP has a negative and significant effect on the economic growth of Ethiopia. This aligns with numerous studies conducted worldwide (e.g., McNabb & LeMay, 2014; Hakim & Bujang, 2012; Ormaechea & Yoo, 2012) that highlight the distortionary nature of direct taxes and their expected negative impact on economic growth. However, this finding differs from the results of Adela (2017), who found a positive and significant effect of direct tax on Ethiopia's economic growth. Furthermore, the current period direct tax and indirect tax per GDP do not have a significant effect on the economic growth of Ethiopia.

## Conclusion and Recommendation

### Conclusion

Most of the tax revenue to GDP in Ethiopia is derived from indirect tax, followed by direct tax. There is no long-run relationship between tax revenue, different classifications of taxation, and economic growth during the study period, which aligns with the neoclassical economic theory. This finding can be attributed to the minimal proportion of taxation to GDP, which is less than 12%, and the fact that most development-related expenditures are not funded by tax revenue.

In the short run, the study's findings show that current period tax revenue mobilization has a positive and significant effect on Ethiopia's economic growth. This is due to the availability of funds for government activities and meeting short-term public requirements. However, one-period lag tax revenue per GDP exerts a negative and significant effect on economic growth. Additionally, in the short run, the one-period lag of direct tax per GDP shows a negative and significant effect on Ethiopia's economic growth. This can be attributed to the distortionary nature of direct tax, as it influences taxpayers' decisions for future actions.

### Recommendations

In the Ethiopian context and within the period of the study, tax revenue does not have a long-term effect on the economic growth of Ethiopia. This may be attributed to the relatively low level of tax revenue mobilization in the country. To address this, it is recommended to increase the contribution of tax revenue to Ethiopia's overall GDP. This can be achieved by expanding the tax base and modernizing the tax administration system. Additionally, raising awareness among taxpayers and tax officials can help enhance tax revenue.

To optimize tax revenue, it is suggested that the Ethiopian government, particularly the Ministry of Revenue, reviews the tax system and establishes a mechanism to shift the sources of tax revenue from direct tax to indirect tax. This can be done by implementing robust tax collection methods and prioritising the collection of domestic indirect taxes. Improving taxpayer awareness and supplying training to tax officials on effective revenue collection are vital steps in this process. Furthermore, it is important for the tax office to strengthen control measures, ensuring that the tax system is free from corruption and malpractices.

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