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Working Paper

Performance and Prospects of Tax Collection in Ethiopia

UNITED NATIONS DEVELOPMENT PROGRAMME

ETHIOPIA





Working Paper

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Acknowledgements:

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1. INTRODUCTION

Domestic resource mobilization (DRM) refers to the process in which countries raise domestic resources and spend these funds to provide goods and services to their people. This includes tax collection, non-tax revenues, domestic borrowing, and from other domestic income sources but it doesn't necessarily have to mean introducing new taxes or increasing the tax rates. For developing countries DRM is the only dependable and long term source of development financing in terms of sustainability and reliability. It is widely accepted that international sources like ODA, remittances, exports and other inflows are not reliable and insufficient to finance development plans and stimulate development in developing countries. There is a growing emphasis on domestic resource mobilization in developing countries to finance their development agendas. DRM increases the ability of governments to achieve long-term objectives by enhancing fiscal sustainability.

Studies also support that raising domestic revenues is the most practical approach to achieve fiscal sustainability. Moreover, the lingering global financial and economic crisis as well as emerging financing needs such as migration, terrorism and other global shocks have given new motivation for exerting efforts around domestic resource mobilization particularly on taxation.

The Montreal consensus, Doha declaration and other G7 and G20 summits underscored DRM as an important tool for sustainable development. Also, domestic resource mobilization has been at the center of the discussion on financing for development in relation to agenda 2030 that came up strongly in the outcome document of the Addis Ababa Action Agenda (AAAA).

However developing countries have had difficulties in mobilizing resources for investment from domestic sources. It has been evidenced that expenditure programs in developing countries have been hampered by low tax revenues. As a result increasing domestic resource mobilization is a policy priority for many countries. In the third financing for development conference it was underscored that strengthening domestic resource mobilization is critically important to accomplish the Sustainable Development Goals (SDGs) and efforts be geared towards enhancing capacity of developing countries to increase their domestic resource mobilization.

In the past decade Ethiopia has made encouraging progress in mobilizing more revenues from domestic sources, particularly in tax revenue. Tax collection increased from Birr 12.4 billion in 2005 to Birr 165.3 billion in 2015 indicating over thirteen fold increase in the decade. Similarly the share of domestic revenue in the total public revenue increased from 77 percent to 94 percent in the same period, and the share of tax revenue stands at 83 percent in 2015. However, there is a challenge increasing the tax revenue proportionate GDP; the tax to GDP ratio remained low at 13.4 percent in 2015 which is way below the Sub Saharan Average of about 18 percent, over 20 percent for emerging economies and above 30 percent for developed economies. In 2005 Ethiopia's tax to GDP ratio was 12.5 percent after a decade of robust and strong economic growth this ratio came to 13.4 percent posting very little progress.

Although the economy has been growing at a remarkable rate averaging more than 10 percent, the slow growth in the tax to GDP ratio suggests the growth in tax collection is not commensurate with the economic growth perhaps indicating a huge untaxed potential.

The main motivation of this paper is to explore some of the challenges to explain why tax to GDP ratio is low at 13.4 percent despite strong and sustained growth recorded in the past twelve years, through analysis of the determinants. Also, the gap between the potential and actual tax revenue in Ethiopia will be estimated using peer country comparisons. The paper deploys both descriptive and empirical analysis. While the descriptive segment attempts to dwell on trend analysis in DRM and tax performance, the empirical model attempts to identify key determinants of the ratio.

The paper is organized as follows. Section two deals with review of related literature including review of similar studies on Ethiopia. Section three is about institutional reforms for enhancing domestic resource mobilization and section four gives overview of performance in DRM and tax collection. Section five dwells on empirical analysis that tries to identify determinants of tax to GDP ratio. Finally the paper gives brief conclusion and policy recommendations.

2. REVIEW OF RELATED LITERATURE

Domestic resource mobilization refers to the generation of revenue from domestic sources and its allocation to provision of public goods and services and productive investments. It is potentially the biggest source of long term financing for sustainable development and the life blood of all state governance in the provision of public goods and services. The major component of domestic resource mobilization is tax revenue.

2.1 Determinants of tax revenue

Tax is an involuntary levy and a policy tool that helps to mobilize revenue to provide public goods and services. Tax helps to redistribute income/wealth in the society that addresses inequality issues. It can also be used to encourage economic activities such as work, investment, equity and supporting economic growth. A good tax system follows the principles of efficiency, fairness and easy to administer. Determinants of tax revenue of countries, as measured by tax to GDP ratio, have been the subject of many researches. The findings of most of the researchers support that the most traditional factors, in conventional literatures indicate that country's economic structure and institutional sophistication explain the variations in tax revenue. There are also a number of studies that attempted to explain the difference in tax performance between countries and regions, mainly by employing cross sectional and panel data analysis methods.

Drummond et al (2011) conducted a panel study covering 28 low income countries on the determinants of revenue in Sub Saharan African (SSA) countries, in line with conventional wisdom, the research found out significant and positive correlation between quality of institutions and revenue mobilization.

The finding was also supported by the case study on Mozambique. Mozambique has brought an improvement in revenue collection following the tax policy reforms in 1996 that has focused on broadening the tax base and improving administrative efficiency.

A study by Botlhole (2010) on the determinants of tax effort in sub-Sahara Africa over the period 1990-2007, using panel data covering 46 countries, established, per-capita GDP, openness and share of agricultural output to be the main determinants of tax collection.

Similarly, Addison and Levin (2008) in their study to identify the determinants of tax revenue in Sub-Saharan Africa found that higher tax to GDP ratios are related to openness of economies, smaller size of agriculture sector, and economic and political stability.

In general, economic, structural and administrative factors determine the size of the tax base and the level of tax efforts. For example, the trade sector has been traditionally a base that is easier to tax. Accordingly, it is a major source of government revenues in SSA and for most developing countries. On the other hand, a large subsistence agricultural sector is often viewed as a signal of difficulty to tax. Some of the major determinants of tax revenue based on theory and literature review are summarized as follows:

Per capita income as a proxy for the overall economic development and sophistication of the economic structure is expected to positively impact the tax revenue.

The sectoral composition: Structure of an economy is one of the key determinants of tax revenue, because not all sectors are easy to tax. For instance taxing the agriculture sector that is mainly dominated by subsistence small holder farming is difficult. The same goes for informal services sector in urban areas. On the other hand, a large amount of tax revenue could be secured from a vibrant mining sector dominated by a few large firms.

The degree of trade openness: the degree of trade openness measured by the sum of exports and imports as a share of GDP, is a key for revenue performance. Due to growing trade among countries and the relative ease of the sector to tax, tax revenue from international trade constitutes a large part of tax revenue in developing countries.

Inflation: inflation as a general proxy for macroeconomic stability is believed to have an impact on economic activities and has important implication on tax revenue collection.

The degree of external indebtedness, the impact of degree of indebtedness of a country on tax revenue most of the time discussed in relation to the motivation it creates for authorities to collect more tax in order to generate primary budget surplus to service the debt.

Foreign Aid: Literatures show that the impact of foreign aid on revenue is still ambiguous. However there are some cases where aid is associated with conditions for trade liberalization, in which case it affects the tax base.

The current account balance as an indicator of a country's external position and determinant of debt sustainability is an important factor. A high current account deficit could negatively affect tax revenue through its crowding out impact of consumption and investment and vice versa.

Foreign direct investment (FDI) is recognized as one of the factors that help to explain variations in tax revenue. One side of the argument focuses on the increased tax revenue expected from increased investment. This argument formed the rationale behind tax incentives and policies—such as low statutory rates and selective preferential tax treatment, like free zones, tax holidays, and credit—is associated with tax competition. (Drummond et al 2011). On the other hand, there are emerging literatures that show how developing countries are losing tax revenues because of exemptions. So, the impact of FDI on tax revenue is a matter of empirical exercises and testing the hypothesis for individual countries.

2.2 Tax buoyancy, elasticity and stability

One of the important dimensions in tax revenue analysis is its responsiveness to variations in national income. Tax buoyancy, elasticity and stability are indicators used to measure this responsiveness. Tax buoyancy measures the total response of tax revenues to changes in national income or gross domestic product and also policy changes by tax authorities. Tax buoyancy is usually measured by regressing the log of tax revenue on the log of GDP, sometimes with additional variables to control for other factors influencing revenue performance. A tax is said to be buoyant if the tax revenue increases more than proportionately in response to a rise in output (Beling et al., 2014).

Tax elasticity is a hypothetical construct that tries to indicate what would have happened if there had been no changes in the tax rules. It takes in to account the pure effect of changes in income by controlling for discretionary changes and administrative improvements. Basically it helps to identify which taxes are or will yield more revenue as GDP increases. Constructing tax elasticity is however difficult because it requires to calculate the counterfactual and it is usually calculated for each tax type instead of total tax revenue. Usually tax elasticity is considered a better indicator to measure tax responsiveness.

Tax stability measures taxes whose revenue is relatively stable or negatively correlated with the revenue from other taxes. Stability of revenue helps governments to have plausible spending and borrowing plans. A simple measure of stability of revenue is the coefficient of variation which is defined as the standard deviation of tax revenue divided by its mean (Haughton, 1998).

2.3 Tax effort

Tax effort measures the ratio of actual tax collection to the potential tax expected from the economy. Traditionally tax potential has been proxied by gross domestic product (GDP) of a country, hence tax effort is simply the ratio of actual tax revenue to GDP. However, the literature on tax effort has evolved particularly in the context of cross-country comparisons. One of such new approaches measures tax potential by regressing tax to GDP on possible explanatory variables, for sample countries. Using this approach, tax effort is the ratio of actual tax to GDP ratio and tax potential (predicted value from the regression). This approach proved to be useful when making cross-country comparisons using panel data. (Stotsky and Woldemariam, 1997, Le et al., 2012).

2.4 Challenges of domestic resource mobilization

Domestic resource mobilization is critically important for sustainable financing of development plans. This is particularly critical in developing countries where the tax base is narrow and other means of financing such as ODA are not predictable due to competing needs of external resources including s lingering financial and economic crises, conflicts, disasters, migration, terrorism and other shocks. Nevertheless, domestic resource mobilization in developing countries like Ethiopia is challenged by a number of factors such as illicit financial outflows, slow structural transformation in the economy, substantial tax incentives like tax holidays and other exemptions. Empirical evidences on some of the challenges, in a developing country context are discussed below.

2.4.1 Illicit financial flows

Illicit financial flows refers to money that is illegally earned, transferred or utilized and does not include outflow of capital due to macroeconomic and governance problems (IFF: 2014). The major sources of illicit money can be commercial tax evasion, trade miss-invoicing including transfer pricing, criminal activities such as drug trade, human trafficking, arms dealing, smuggling and contraband, bribery and theft by corrupt governments. Generally, illicit financial outflow is often driven by criminal activities by deliberately keeping away and hiding transactions from the view of law enforcement agencies. Tax evasion or tax avoidance can be the major component of illicit financial flows and can be reduced or prevented through statutory anti avoidance rules if these rules do not exist or ineffective. The High Level Panel 2014 Report on illicit financial flows in Africa indicated that Africa is net creditor to the world losing \$60 billion every year in contrast to \$50 billion inflows in the form of ODA. The same report noted that illicit financial outflows is concentrated in few African countries and the top ten countries accounted for about 80percent of illicit outflows in the continent. Ethiopia is one of the courtiers where illicit financial outflows is significant and the Report estimated that \$16.5 billion outflowed since 1970 which is 2.3percent of the total Africa illicit outlaws. Ethiopia is also losing 6 percent of its GDP every year in the form of illicit outflows (IFF: 2014).

If addressed illicit financial flows can be an important component of domestic resource mobilization. Thus it is crucial that government policies should give attention and address the problem of illicit flows to enhance mobilization of domestic resources.

2.4.2 Slow structural transformation

Several studies have indicated that the sectoral composition of an economy has a significant impact on tax revenue collection. Some sectors of the economy are easier to tax than the others. For instance, the agriculture sector has been difficult to tax, for many African countries, as it is dominated by a large number of subsistence small holder farmers.

One of the structural factors that challenges domestic resource mobilization is low income and high share of agriculture in GDP. This is supported by North-South institute (2010) Karagoz (2013). A large proportion of the population – in agriculture or informal sectors – are difficult to tax because they have low incomes (and expenditures) or are unregistered for tax (IMF, 2011). This implies that the longer countries stay dominated by agriculture and informal sectors, the less they are able to increase tax revenues.

2.4.3 Tax incentives and exemptions

A study by the North-South Institute has identified some common challenges to African countries related to domestic resource mobilization. It found that tax mobilizations remained weak despite significant reforms mainly due to capital flight, tax evasion and increase in tax exemptions (North- South institute (2010).

Many developing countries, particularly in Sub-Sahara-Africa, offer significant tax exemptions and incentives such as tax holidays, tax credits, reduced income tax rates, accelerated depreciation allowances, concessions in export processing zones, import duty waivers and full repatriation of profits in order to attract foreign investments.

However, some evidences show that tax incentives are not necessarily critical drivers of foreign investment. Studies also claimed myriad of tax exemptions and incentives are resulting in low effective tax revenue mobilizations in Africa. For example, a report by African Development Bank (2010) indicated Tanzania lost US\$ 1.23 billion (6percent of GDP), in 2008, through tax exemptions (Kariuki and Kiragu 2011).

While tax incentives may promote economic activities and investments, tax exemptions can complicate tax administration and erode the tax base and hence exemptions need to be kept to minimum.

In addition low level of savings, capital flight, poor local economic governance and weak administrative system and organizational capacities are often mentioned as challenges to enhancing domestic resource mobilization in developing counties.

2.5 Tax gap


Tax gap refers to the difference between actual tax revenues collected and estimated / potential tax revenue based on prevailing characteristics of an economy and income level. A more strict definition identifies the tax gap as “the difference between tax collected and the tax that should be collected; the theoretical liability, which is the tax that would be collected if all individuals and companies complied. This aggregate gap is the sum of individual tax gaps, or components of the aggregate tax gap. There is a considerable agreement among research findings on taxation in developing countries that there is huge potential to increase tax revenue in most low-income countries (Mascagni, et al, 2014). Reasons for tax gap range from policy choices by government to administrative problems such as tax avoidance and weak administrative systems and capacities.

2.6 Studies on Ethiopia

There are some empirical studies conducted on the performance of tax revenue mobilization in Ethiopia. Most of the studies focused on analyzing the impact of the tax reforms undertaken in several periods.

One of the notable researches in this area is a study by Bayu (2015), which analyses tax buoyancy and its determinants in Ethiopia. The findings of the study indicate that direct and domestic indirect tax revenues were non-buoyant both in the short and long run, though foreign trade taxes showed sign of buoyancy in the long run. As for the factors that affect tax buoyancy, the study found out the share of services sector value added, level of import and over all government budget deficits to GDP affected the tax buoyancy positively, whereas the impact of the share of official development assistance to GDP was negative. The impact of the share of industry value added to GDP was positive but not statistically significant. Based on those findings tax revenues are non-buoyant in Ethiopia, emphasizing the need to enhance the efficiency of revenue administration in bringing new customers in to the tax net.

Belew (2001) reviewed tax reform in Ethiopia and found that designing a tax system which enables the government to raise more resources as the economy grows and recommends that the tax policy should focus on taxation of the growing economic sectors, taxation of income, and profit as well as taxation of consumption goods with high elasticizes of demand.



Abdella and Clifford (2010) in their study on the impact of tax reform on the private sector performance in Ethiopia reviewed tax reforms which have been made to the tax system of Ethiopia. The study found that there are, significant discrepancies between the laws and directives and several ambiguities in the proclamations, regulations and directives. Moreover, there is often a considerable time lag between the issuance of tax proclamations and regulations, and the associated implementation directives, which increases risk and uncertainty for businesses.

Asaminew (2010) estimated the size of the informal or underground economy in Ethiopia and its implication on the size of tax evasion. He used a monetary approach to estimate the size of the underground economy. The study suggests that there is a significant amount of economic activity (>36percent of the recorded economy) that is not reported and captured by the official statistics. The amount of tax evasion was estimated to be 10 percent of the economy in 2010. This is an important finding with implications on tax policy. He particularly pointed out the implication of the finding on the incentive structure towards the small and medium scale enterprises.

Geda and Shimelis (2005) reviewed tax reforms in Ethiopia and explored the contribution of the tax reforms (structural and institutional) to understand its role of increasing revenue in using incidence analysis. They found that most commodities that are subject to some kind of tax whether excise, import duty or sales tax, turned out to be progressive while commodities such as salt, sugar and kerosene tend to be regressive. In addition the distributional impact of the benefits of freely provided services such as education is examined.

Belew (2001) studied tax reforms in Ethiopia and argued that the low tax to GDP in Ethiopia shows existence of modest tax burden and room for raising more revenue. This may suggest that there is opportunity to increase revenue without affecting savings, investment and productive incentives to the private sector. The tax policy may focus on taxation of the growing sector, income, profits and consumption of goods with high elasticity of demand.

In summary, the literature suggest the existence of untaxed income due to reasons related to the structure of the economy and administrative inefficiencies. This indicates there is a room to increase tax revenue by improving the tax administrations and enhancing the structural transformation towards industry sector.

3. INSTITUTIONAL AND TAX REFORMS IN ETHIOPIA

Tax and institutional reform in Ethiopia can be traced back to the early 1940s where the Government made tax reforms that include amendment to property taxes (Geda and Shimelis, 2005). After the change of the socialist government in 1991, there have been a wide range of reforms and liberalization measures undertaken by the government including tax reforms. Major reform in the tax regime including reduction of the marginal tax rate and import duties. Significant reforms were made in the tax regime in 2002 and the VAT was introduced and replaced sales tax since 2003. For example, the marginal income tax rate was reduced to 35 percent and business profit tax to 30 percent.

In terms of institutional reforms the Government merged the three institutions namely the Ministry of Revenue, Inland Revenue Authority and The Ethiopian Customs Authority and established the Ethiopian Revenue and Customs Authority (ERCA) in 2006; this was effected based on a business process reengineering study.

ERCA which has a mandated authority for revenue collection and tax administration in Ethiopia has formulated a multi-sector change and tax modernization framework. The Authority has adopted strategic directions and has been actively engaged and committed for its implementation. Registration of tax payers (finger prints) and issuance of tax Identification numbers (PIN), broadening the VAT tax base, improvement in tax administration and trade facilitation were some of the measures taken by ERCA.

As a result, Government has made strong efforts to improve its domestic resource mobilization over the past decade mainly by transforming its tax regime. These efforts have started to pay off as revenue from taxation has reached 83 percent of total domestic resources in 2015. It is also well understood by the government that there is a greater need to maximize domestic resources to finance a number of development projects outlined in the medium term plan at the forefront of declining Official Development Assistance (ODA). The government further envisages for revenue from taxation to increase to 17 percent of GDP by the end of the second Growth and Transformation Plan, 2020 from the current level of 13.4 percent.

It is expected that further enhancing capacity of ERCA would improve fiscal management and strengthen revenue administration as well as assist the government to increase domestic resource mobilization by streamlining the tax policy and strengthening tax administration. Further, improving taxpayer services, lowering the cost of compliance and expediting customs clearance can improve voluntary compliance while lowering cost of doing business in the country. (UNDP: 2013)

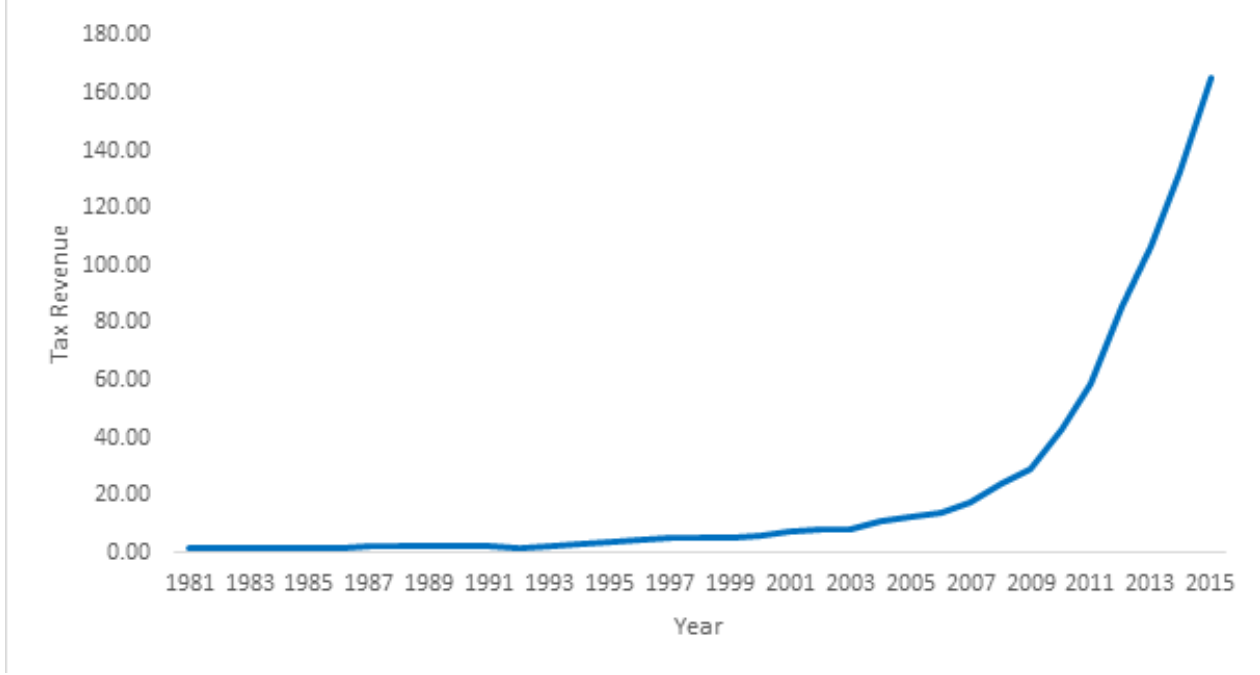
4. PERFORMANCE IN DOMESTIC RESOURCE MOBILIZATION IN ETHIOPIA

The Government prioritizes the use of domestic resource mobilization tools as vehicles for financing its development. This includes tax collection, non-tax revenue, domestic borrowing, and other domestic income sources. This includes resource mobilization by regional governments, mobilization of resources through capital bonds (Saving Bonds, Power Bonds, Diaspora Bonds, NBE bond) and the remittances for financing the foreign exchange component in the medium-term. Enhancing domestic resource mobilization is pivotal to ensure sustainable high rates of growth. Unlike foreign aid and FDIs, domestic finances are more predictable, reliable and can be directed to desired sectors. Moreover, other countries' experiences indicate that relying on domestic resources is essential to solidifying ownership over development strategies and strengthening the bonds of accountability between government and citizens. Cognizant of this fact, Ethiopia has over the past decade significantly enhanced its domestic resource mobilization with significant increase in tax collection through institutional reforms, improvement in tax administration, and trade facilitation. In 2015 for instance, total Government revenue and grants was Birr 199.6 billion (16.1 percent of GDP) of which 93.5 percent or Birr 186.6 billion (15.1 percent of GDP) was collected from domestic sources.

4.1 Tax collection

Domestic revenues collected from tax sources have been significantly increasing in the past 10 years, compared to the preceding decades (Figure 4.1). Tax revenue annually grew by an average of 30 percent, in nominal terms, between 2006 and 2015 compared to 12.6 percent in the preceding corresponding decade. As depicted in figure 4.1 tax collection has been increasing sharply after 2005 where implementation of the institutional and tax reforms were invigorated.

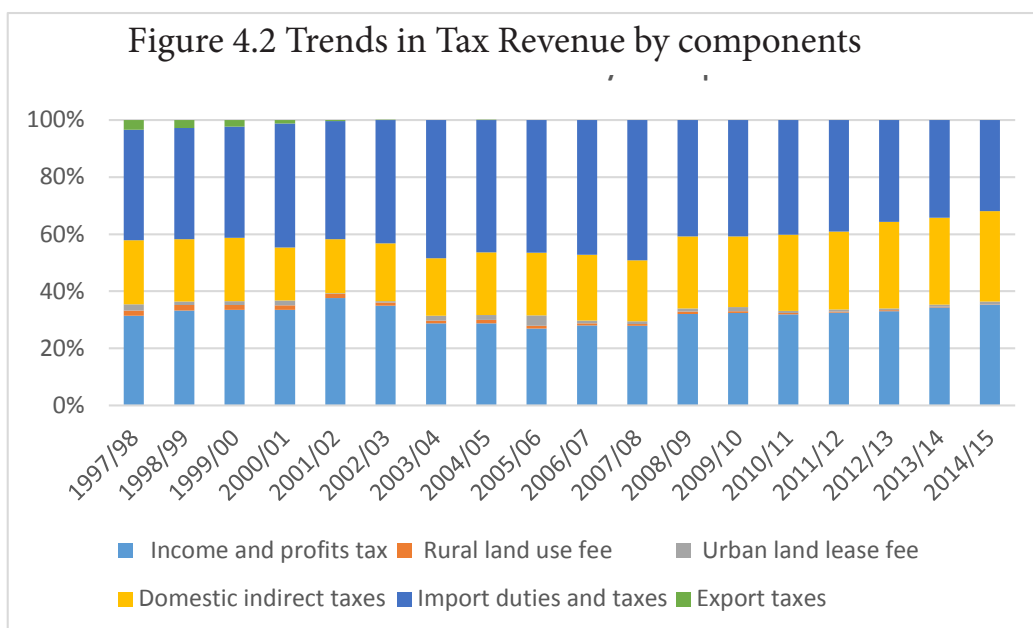
Figure 4.1 The Trend in Tax Revenue Collection (in Billion Birr)



Source: MoFED Government Finance Statistics

In terms of composition, income and profits tax, import duties and domestic indirect taxes jointly make up 99 percent of the revenue and the remaining one-percent coming from land use fees. Import duties and taxes have contributed sizable share over the years. The past seven years have seen increased contribution from indirect taxes largely owing to the application of VAT and excise taxes. Tandem with the strong economic growth in the past decade, the share of income and profits taxes have considerably increased in the same period (Figure 4.2). Tax collection increased from Birr 12.4 billion in 2005 to Birr 165.3 billion in 2015. In terms of components direct tax, indirect domestic tax and import duty each account for roughly one-third of the total tax collection. Figure 4.2 depicts trends in the shares of components of the tax revenue.

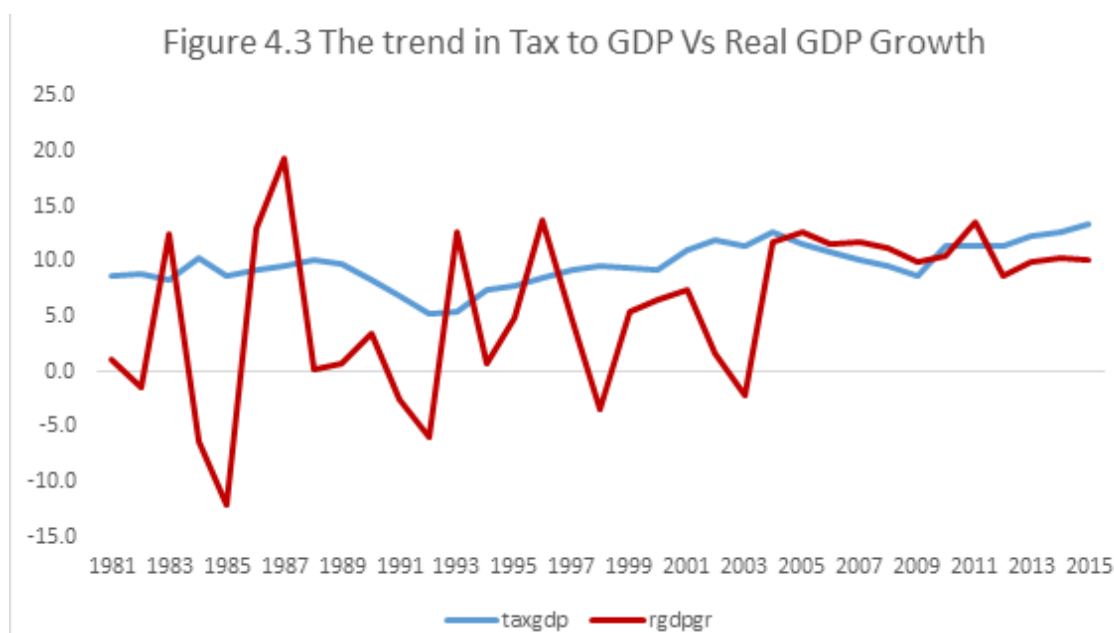
Figure 4.2 Trends in Tax Revenue by components



Source: Calculated Based on MoFED Government Finance Statistics

Even though tax revenue collection was growing at a reasonably high rate, analyzed in relation to the growth in GDP, the growth has not been significant. As a result, the performance measured in terms of the tax to GDP ratio was unstable, though a more upward trend is observed after 2010 (Figure 4.3). Tax revenue as percent of GDP roughly remained the same between 2004 and 2014 at 12.7 percent, with ups and downs in between and increased to 13.4 in 2015.

Looking at a longer time period, the tax to GDP ratio moved from 8.7 percent in 1981 to 13.4 in 2015, with a lot of fluctuations, hitting its lowest in 1992/93, at 5.2 percent, because of the transitioning in government. The growth in tax revenue collection became faster after 2004, the growth was much slower in the preceding two years following the elimination of export taxes. There was a huge jump in the ratio from 8.7 percent in 2009 to 11.4 percent in 2010, due to a massive exchange rate devaluation that happened in the period. The trend in the last three years suggests relative improvement in the tax to GDP ratio.



5. EMPIRICAL ANALYSIS: DETERMINANTS OF TAX PERFORMANCE IN ETHIOPIA

5.1 Data, methodology and estimation

In this section we used an empirical analysis to identify the determinants of tax revenue in Ethiopia. The model is developed based on the theory, related literatures on developing countries and taking in to consideration of Ethiopia's context. A linear regression model is estimated to see what really determines tax revenue mobilization in Ethiopia. Time series data for 35 years (1981-2015), from national data sources (Ministry of Finance and Economic Development and National Bank of Ethiopia) are used. Tax revenue to GDP ratio is specified as a function of per capita income, share of agricultural output in the economy, openness of the economy, macroeconomic stability and tax reform. Variables such as the share of informal economy are not included due to unavailability of data. Policy dummy is also included to capture the impact of reforms.

$$\text{tax/GDP} = \alpha + \beta_1(\text{aggdp}) + \beta_2(\text{open}) + \beta_3(\text{lnpcgdp}) + \beta_4(\text{inflation}) + \beta_5(\text{reform}) + e \dots \dots \dots (1)$$

Where the variables are defined in table 5.1. The expected impacts are based on both theoretical priori and empirical findings in similar studies.

Table 5.1 Variation definition

Variable	Definition	Expected impact on Tax to GDP ratio
AGGDP	Share of Agricultural Value added in the GDP	Negative
Open	Openness of the economy calculated as the sum of exports and imports as percentage of GDP	Positive
LNPCGDP	Per capita GDP to capture the impact of economic growth (in logarithm terms)	Positive
Inflation	Inflation rate to capture the impact of macroeconomic stability	Negative
Reform	A dummy variable to capture the impact of the reform after 2003	Positive

In identifying the determinants of tax revenue mobilization in Ethiopia, the estimation of this model will shed light on income elasticity of tax revenue that will be captured through the coefficient for the impact of per capita GDP and the effectiveness of the reforms undertaken between 2003 and 2009 captured by the coefficient for the dummy variables.

5.2 Estimation and results

The first step undertaken was testing the variables of interest for unit root to avoid spurious regression. Augmented-Dick Fuller unit root test was performed on tax to GDP ratio, share of agricultural GDP, per capita GDP, openness and inflation. The following table shows the test results.

Table 5.2 Variation definition

Variable	Test Result
Tax to GDP	Not Stationary/ I (1)
Logarithm of Per capita Income	Not Stationary/ I(1)
Openness (External trade/GDP)	Not Stationary/ I (1)
Agricultural GDP	Not Stationary/ I (1)
Inflation	Stationary/ I (0)

Since our variables of interest, except inflation are integrated of order I (1) (non-stationary) and inflation is I (0), the Engle-Granger two step approach can be used, where long-run co-integration and short run dynamic models are estimated. This approach allows to model the long run equilibrium relationship by regressing the levels of the variables in the first step by using Ordinary Least Square (OLS). The second step involves estimating a short run model by using differenced (stationary) form of the variables by including the first lag of the residual term from the long run model called the error correction mechanism. It should be noted that there are limitations to this model as it allows only for one co-integrating relationship and simultaneity bias that could arise from endogeneity of variables treated as exogenous, hence it is difficult to give sensible interpretation about the coefficients of each variables in the long-run model.

Long-run Model

The following summary output of the regression (equation 1) shows the existence of long-term relationship between the dependent variable and the explanatory variables. In the long run inflation, openness, and share of agriculture significantly explain tax collection and with the expected signs. Table 5.3 shows the result of the long run model where the dummy variables are included to account for tax policy and institutional reforms. The residual of the estimated model is found to be stationary at 5 percent significance level suggesting that there is long run relationship between the dependent variable and explanatory variables included in the model.

Table 5.3 : Results: Long run models

	Coefficient	T- statistics	Probability
Tax/GDP			
AGGDP*	-0.133	-2.06	0.048
Openness***	0.095	4.21	0.000
LPCGDP	-0.901	-0.78	0.442
Inflation***	-0.086	-4.51	0.000
Constant	17.19	3.16	0.169
D-reform	1.084	1.41	0.253
D-institution	1.082	1.17	0.004
Adj-R ²	0.76	18.94 (F-Statistic)	0.000

Note: *** (1percent significance level), ** (5percent) and * (10percent)

Error correction (short run dynamic) model

The short run model is specified as equation 2, where the first difference (changes) in the non-stationary variables are considered and the first lag of the residual value from the long run equation is included to account for the error correction model (ECM) or speed of adjustment to steady state.

$$d.\text{tax/GDP} = \alpha + \beta_1(d.\text{aggdp}) + \beta_2(d.\text{open}) + \beta_3(d.\text{lnpcgdp}) + \beta_4(\text{inflation}) - \text{ECM}(\text{eq1-resid}(-1)) + e \dots (2)$$

Table 5.4: Results: Error correction model (Short run dynamics)

	Coefficient	T- statistics	Probability
D.tax/GDP			
d.AGGDP	-0.082	-1.17	0.252
d.Opennes	0.016	0.48	0.633
d.LPCGDP	0.367	0.12	0.907
Inflation**	-0.055	-3.03	0.005
L1.resid**	-0.481	-2.86	0.008
Constant	0.557	1.41	0.013
Adj-R ²	0.36	4.7 (F-Statistic)	0.003

Where the prefix d refers to the first difference of the variables

Note: *** (1percent), ** (5percent) and * (10 percent) significance levels

Table 5.4 shows the results of the short run error correction model. The result suggests that only the inflation rate and the error correction term have significantly explained tax collection. This may suggest the inflation dynamics is important in determining tax collection. The share of agriculture in the GDP, trade openness and per capita GDP have indicated the expected signs in their coefficients but are not significant. The coefficient of the lagged residual variable shows adjustment of 48 percent towards long run equilibrium. This implies that 48 percent of the error or disequilibrium will be adjusted annually.

Summary of findings of the empirical model

The result shows that in the Ethiopian case sectoral composition of the economy, trade openness and macroeconomic stability are the major determinants of the level of tax to GDP ratio. The dummy variable which captures tax reform was not significant enough though the effect is positive as expected. The impact of per-capita GDP was also found to be insignificant but bears the expected sign.

The model explained 76 percent of the variation in tax revenue as indicated by the adjusted R². As is the case in other developing countries, the dominance of the agriculture sector is negatively related to the level of tax revenue mobilization. The impact of trade openness is significant and positive as Ethiopia collects around one-third of its tax revenue from imports.

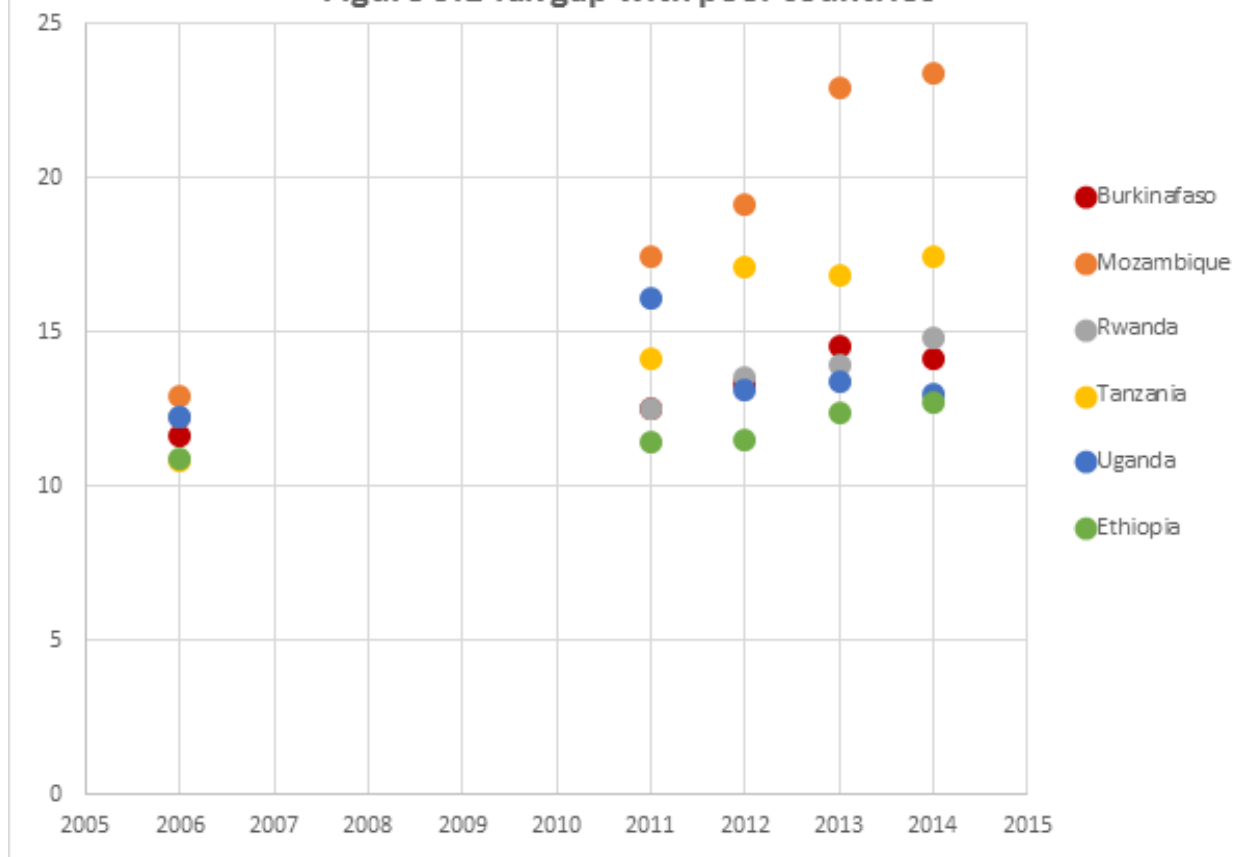
The impact of the change in per capita income, it is not statistically significant as opposed to the theory and empirical evidences from other countries. This indicates that there is a reasonable share of the economy which is not taxed. So far, the growth registered in the economy has not resulted in commensurate taxation. The fact that services contributes to the economic growth, while at the same time it is the sector hoarding majority of the informal sector, which are out of the current taxing spectrum, could be one reason. Macroeconomic stability as measured by inflation is found to have significant negative impact as expected.

5.3 Tax gap analysis for Ethiopia

Standard models for tax gap analysis, discussed in the literature review, could not be estimated for Ethiopia because of data limitations. Instead a simple approach is followed to crudely estimate and look at the dynamics of the tax gap in comparison to peer countries. The evolution of the gap between tax to GDP ratio of Ethiopia and other comparable African countries is studied to estimate how far Ethiopia's tax collection is from its potential.

Figure 5.1 shows the dynamics of tax gap of six countries including Ethiopia. Compared to the peer countries, Ethiopia's tax gap has been widening. For instance in 2006, Mozambique, Uganda, Burkina Faso, Tanzania, Rwanda and Ethiopia have all tax to GDP ratios between 12.9 and 10.9 percent, the maximum gap between these countries being 2 percentage points. In 2014, however, the gap between Ethiopia and Mozambique has increased to 12 percentage points, the gap with Tanzania increased to 5 percentage points, while the gap with Uganda narrowed to 0.3 percentage points. In general, the tax gap between Ethiopia and peer countries have significantly increased in the eight years between 2006 and 2014 (see figure 5.1).

Figure 5.1 Tax gap with peer countries



Among the peer countries, considered in this analysis, Mozambique, which is best performing in terms of effectiveness of tax reforms and increasing its tax to GDP ratio to 23 percent, is taken as a benchmark to numerically estimate Ethiopia's tax potential and gap.

Furthermore, Mozambique is frequently cited in the literature as a best practice of recording remarkable performance in increasing its revenue from taxes in few years' time. Tax revenue as percent of GDP almost doubled between 2006 and 2014 (from 12.9 percent to 23.4 percent). Mozambique's real GDP growth averaged 7.3 percent in the period (Figure 2.1). A case study conducted by IMF (2010) attributes the performance to stable macroeconomic conditions, tax policy and tax administrations reforms. Such achievement was registered in spite of Mozambique being a low income country with a relatively small working age population. Durmmond et al (2011) reviewed experience of low income Sub Saharan African countries in mobilizing revenue in recent decades and found that these countries managed to collect 0.5 to 2 percent of GDP in the short to the medium term and 2 to 3.5 percent of GDP in the long term, which makes Mozambique exceptional case.

Also, what makes Mozambique a good case for this exercise is its similarities in economic structure with Ethiopia (like Ethiopia its service sector contributes 45 percent of the GDP and agriculture is still important but contributing around 29 percent of GDP while Ethiopia's agriculture accounts for 39 percent of GDP). Mozambique and Ethiopia are also comparable in terms of GDP per capita. Average per capita income between 2011 and 2015 was USD 585 for Mozambique and USD 573 for Ethiopia¹. However, since the contribution of the industry sector in Mozambique is larger at 21 percent of GDP compared to 15 percent for Ethiopia, the different in tax to GDP ratio between the two (tax gap for Ethiopia) is accordingly discounted by the difference in the contribution of industry sector (by 5 percent). Table 5.5 presents the estimated difference (tax gap) between Ethiopia and Mozambique calculated based on their performance in tax collection and structure of their economies.

Table 5.5: Ethiopia's Tax Gap compared to that of Mozambique

Period	Ethiopia: Tax to GDP Ratio	Mozambique: Tax to GDP ratio	The difference	Discounted Difference (Gap for Ethiopia)	Ethiopia Nominal GDP (in billion USD)	Ethiopia's Tax Gap in billion USD
2011	11.5	18.1	6.6	1.6	31.9	0.5
2012	11.5	19.1	7.6	2.6	43.1	1.1
2013	12.4	22.9	10.5	5.5	47.4	2.6
2014	12.7	23.4	10.7	5.7	55.6	3.2

Source: World Bank WDI, IMF Article IV consultation reports

This simple analysis shows that Ethiopia has lost at least USD 3.2 billion that should have been collected from taxes, in 2014, which could be attributable to factors including illicit financial flows, tax exemptions, informal sector and other tax evasions. The gap could be underestimated as the Mozambique tax collection could have its own inefficiencies, though performed better compared to others. Also, according to a study on the informal sector in Ethiopia by Asaminew (2010) that suggests Ethiopia is losing around 10 percent of its GDP in tax evasion, the gap will be much higher.

One of the favorable macroeconomic conditions Mozambique enjoyed was the significant growth in its secondary sector. The tax policy reform launched in 1996 is believed to be the main driver behind the increase in revenue collection. The reform focused on improving administrative efficiency, broadening the tax base, and moderating tax rates. In addition, there have been significant administrative changes too, which includes adoption of the new electronic financial administration system (e-SISTAFE), strengthening services and information to taxpayer and computerizing transit procedures.

¹World Bank, World Development indicators

6. CONCLUSIONS AND POLICY RECOMMENDATIONS

6.1 Conclusion

Domestic resource mobilization refers to generation of revenue from domestic resources and its allocation for the provision of public goods and services. It is critically important as it is potentially the biggest most reliable source of financing, particularly in developing countries. Tax revenue is the major component of domestic resource mobilizing which in turn depends on the level of income or GDP. Ethiopia has registered robust and strong growth averaging over 10percent in the past twelve years indicating that the country is moving in high rate of growth trajectory. Tandem with this growth tax collection has been significant with annual average collection rate of 30percent. Nonetheless, the tax collection as a ratio of GDP, which is the standard measure of tax performance remains low at 13.4percent in 2015 in contrast to 12.7percent in 2004 and a target of 15percent in the midterm development plan (GTP I²).


The main objective of this paper is to estimate the gap between the potential and actual tax revenue performance in Ethiopia and explore some of the challenges why tax to GDP ratio remains low despite strong and sustained growth recorded in the past twelve years. The empirical result above suggest that macroeconomic stability, trade openness and share of agricultural GDP are important determinants of tax collection in Ethiopia. Per capita GDP as well as policy and institutional reforms have also influenced tax revenues. A simple tax gap analysis of comparing Ethiopia with peer countries in Africa also indicated that there is untapped potential to collect more tax revenue. Tax gap analysis with Mozambique for example indicated more than 5percent of GDP gap for Ethiopia.

Results of both the descriptive and empirical analysis above suggest that huge tax incentives/ exemptions, illicit financial flows and slow structural transformation, low level of savings, poor economic governance and weak administrative system and organizational capacities are challenges to increase tax revenue and if these challenges are addressed, it is possible to tap the potential and increase tax collection in Ethiopia.

6.2 Policy recommendations

(i) Many countries including Ethiopia provide a lot of incentives and give-up revenues to attract investment. Empirical evidence however show that investors are more attracted by economic fundamentals like market size, infrastructure, skills, and stability and marginally by tax incentives. Moreover these incentives may be abused by investors. It is therefore very important to rationalize the tax incentives and exemptions by reviewing the existing incentive structure frequently to make it effective and value for money. Hence, effectively streamlining and limiting incentives and opportunities for rent seeking and in appropriate behavior is very important.

²GTP I is the first Growth and Transformation plan that covered the period 2010/11 to 2014/15. Note that the Ethiopian fiscal year runs from July 8 to July 7



(ii) The majority of revenue is collected from a narrow tax base. Increasing the tax base is fundamental to increase tax to GDP ratio, i.e. increasing both the income tax base and indirect income tax base (through promoting private spending) as well as widening the tax net. If the tax bases are not growing at the same rate with the GDP growth rate, it would be difficult to increase the tax to GDP ratio. Continuously broadening the tax base by improving tax administration, trade facilitation and enhancing capacity is critically important to increase the ratio.

(iii) The tax system should be simple, clear, and transparent. Taxpayers shall not feel uncertain and overburdened with the system. Thus, the Authority shall strengthen existing tax policy, clear laws and regulations, strong tax payer protection, and close any loopholes that discourage tax payers from being compliant to tax laws.

(iv) Addressing the issues of illicit financial flows and maintain macroeconomic stability to enhance investment and discourage capital outflow. Pursuing tax inspectors without borders imitative will also help to address illicit outflows.

(v) Tax education and building capacity at all levels should be a continuous and critical role of the authorities and development partners.

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