MACRO-ECONOMIC DETERMINANTS OF TAX REVENUE IN ETHIOPIA:
A TIME SERIES ANALYSIS

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DECLARATION

I, herby declared that this thesis titled "Macro-Economic Determinants of Tax Revenue in Ethiopia" is my original work and no part of this work has been presented for another degree or master's degree in any other university, and that all source of materials used for this thesis have been duly acknowledged and a list of reference is provided.

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ENDORSEMENT

This thesis has been submitted to St. Mary's University, school of Graduate Studies for examination with my approval as a university advisor.

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APPROVAL SHEET

As members of board of examining of the final MSc thesis open defense, we certify that we have read and evaluated the thesis prepared by DilanteMengistie under the title "MACRO-ECONOMIC DETERMINANTS OF TAX REVENUE IN ETHIOPIA: A TIME SERIES ANALYSIS" we recommend that this thesis to be accepted as fulfilling the thesis requirement for the Degree of Master of Science in Development Economics

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External Examiner   Signature

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ACRONYMS AND ABBREVATIONS

ADF	Augmented Dickey Fuller
AIC	Akaike Information Criteria
ECM	Error Correction Method
EEA	Ethiopian Economic Association
EPDRF	Ethiopian Peoples of Democratic Republic Front
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
IMF	International Monetary Fund
LAC	Latin America and the Caribbean's
LM	Langragian Multiplier
MoFED	Ministry of Finance and Economic Development.
NBE	National Bank of Ethiopia
ODA	Official Development Assistance
OECD	Organization for Economic Cooperation and Development
OLS	Ordinary Least square
PP	Phillips - Perron
SSA	Sub Saharan Africa
VEC	Vector Error correction
WB	World Bank

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ABSTRACT

The purpose of this study is to investigate the major determinants of tax revenue in Ethiopia from the period 1985 to 2016. Descriptive statistics and time serious econometrics model were used to analyze the data. The descriptive statistics,resultswere found to be in line with different literatures. Accordingly, GDP, industry share %GDP and trade openness have a positive relation with tax revenue collected. Whereas, agriculture share %GDP and inflation rate are found a negative relation with tax revenue. The study employs a Vector Error Correction Model (VECM) to co-integration in order to investigate the long-run and short-run relationship of the dependent variable i.e. tax revenue with GDP, Agriculture share %GDP, Industry share %GDP, Trade openness and Inflation rate. The long-run empirical result using the Johansen test for co-integration tells that there is a long-run causality running from all the independent variables to the dependent variable. The short-run causality also checked by the model and the result shows the joint causality of each variable with different lag running from each independent variable to the dependent variable.Finally, the coefficients of equilibrating Error Correction Term (ECM) suggest that the speed of adjustment (feedback effects towards the long run equilibrium) takes few years for full adjustment when there is a shock in the system.Then it found convergence of the model to the long-run equilibrium. At last this research work suggests for the policy makers to encourage those independent variables to increase the growth level in order to maintain the growth of tax revenue. On the other hand, variables with a negative relation with tax revenue should be reduced to their minimum level to erode the effect on tax revenue.

Key Words: *Determinants,Tax revenue, VECM, Johansen co-integration, World Bank, Ethiopia.*

1. INTRODUCTION

1.1 Background of the Study

Government as main regulatory body needs revenue to sustain as a nations' governor. The nation, for the well-being of its people needs many infrastructures like high ways, electric power stations, telecommunication, water and sewerage system, educational institutions, health centers, police force and many more staffs. These all can be fulfilled with the availability of adequate financial resources or in short 'budget'. Country's budget may generate from tax collection from inland revenues and customs duty from international trade; international loans and grants; domestic bank loans and printing new money which is not the healthiest of all sources.The fiscal deficit is the core issue of most of the developing countries over the past several decades. The reason behind the large increase in fiscal imbalance is the rapid expansion in expenditure and low revenue collection. Endogenous growth models have demonstrated that growth can be achieved by reducing fiscal imbalance, which can be achieved either by lowering expenditure or increase tax revenue. However, many developing countries have used option of reducing expenditure by dropping expenditures in areas like health, education and infrastructure and other sectors instead of raising tax revenue due to lack of appropriate fiscal policy. Developing countries like Ethiopia faces huge budget deficit to finance those sectors and development projects. In Ethiopia public saving has shown quite a remarkable recovery in the 1990s. Thus, in this respect the government's fiscal policy seems promising. However, total domestic saving was far below the level of investment, and this resulted in a government deficit of about 10 percent of GDP per annum in the last decade (Alemayehu 2005).

Ethiopia is now on the truck of growth and transformation in many sectors by choosing the unbalanced growth model which focused on agricultural development led industrialization. This policy needs huge public and private investment to provide the needed capital in the agriculture sector in order to move forward the sector to play the leading role. We are now looking bright performance towards public investment in terms of road construction, educational institutes, health centers, sugar and fertilizer factories, electric power and telecommunications and many

infrastructural sectors. However, excessive reliance on foreign finance may in the long run lead to problems of debt sustainability; developing countries need to rely substantially on domestic revenue mobilization. The main and most important reasons for taxation are to finance government expenditure and to redistribute wealth for the development of country in general (Jhingan 2004).

Tax is one of the main sources of government revenue to finance the budget. Tax revenue is very important and the best method for the sustainability of both developed and developing nations. Taxation is the main source of government revenue and tax collection is mandatory and regular activity for every government which can guarantee the stableness. In other words without enough budget it is not possible to meet the social and public needs of the society by providing not only public goods and services but also establishing armed forces and judicial systems to ensure the security and justice. On the other hand taxation is one method of transferring resources from the private to the public sector through the mechanism of progressive taxation system which means a person with higher income should pay higher tax than a person with lower income. This will help the government to reduce the level of income inequality by collecting higher tax from the riches and providing public goods and services to poor peoples who cannot afford by themselves. Taxes are revenue collected by the government to afford public services for the country and finance its daily activities (Bhatia, 2009).

A country's revenue generation primarily depends up on its sufficient capacity to tax more in both economic and administrative term. One measure used to determine a country's tax mobilization is tax collected as a percentage of GDP. When we see the tax to GDP ratio of selected African Countries as reported in a tax Administration workshop in Kenya, Ethiopia's tax mobilization is the lowest that is 12.2 percent of the total GDP. Whereas according to world bank data other Sub-Saharan countries for instance, Kenya and Zambia has relative higher tax-GDP ratio which is 17.7 and 17.0 respectively on 2005/06. This is to mean that tax revenue has different characteristics of an economy across nations. This difference is attributed to determinants that are unique to different countries due to socio-economic and political situations.

In addition, most African economies, including Ethiopia are characterized by large hard-to-tax sectors, such as small enterprises, small farms and a high level of informal sectors (Dioda, 2012).

1.2 Statement of the problem

In many developing countries it's observed that there is low capacity of tax administration to monitor compliance among rental taxpayers (Tanzi, 2000). Many problems observed like poor administration, failing to collect sufficient tax revenues, tax structures where tax horizontal and vertical equity considerations are not integrated, lack of government and economic stability. Ethiopia, like any other developing countries, faces difficulty in raising revenue to the level required for the promotion of economic growth. Hence, the country has experienced a consistent surplus of expenditure over revenue for long period of time. To tackle this problem the government impose tax (direct and indirect), among others, as major and important sources of public revenue.

Many research works has been suggested in accordance to the determinants of tax revenue. Abhijit(2007) confirm that structural factors such as per capita GDP, agriculture share in GDP, trade openness and foreign aid significantly affect tax revenue performance of an economy. Other factors include corruption, political stability, share of direct and indirect taxes etc. Kadir(2013) reveal that tax revenues in Turkey is significantly affected by agricultural and industrial sector share in GDP, foreign debt stock, monetization rate of the economy and urbanization rate whereas the sign of the agricultural sector's share is negative as expected and the result suggest that openness to foreign trade has no significant impact on tax revenues. Belay (2015) reveals that gross domestic product, public debt, foreign direct investment, and openness have significant positive relationship with tax revenue performance. But, foreign aid is negatively related to tax revenue performance.

This study will clear the controversial issues like the magnitudes of the independent variables in relation with the dependent variable which may undertake to discover just macro-economic factors that determine tax revenue in Ethiopia.

1.3 Objective of the study

1.3.1 General objective

The general objective of the study is to identify the macro-economic determinants of tax revenues in Ethiopia.

1.3.2. Specific objective

The specific objectives of the study are:

- To understand the long run and short run relationship between tax revenue and Ethiopian GDP;
- To examine whether there exists causal relationship between tax revenue and determinant factors;
- To examine the impact of other macroeconomic variables included in this study on the tax revenue performance of Ethiopia;

1.4. Research hypothesis

H_1: GDP has positive impact on tax revenue;

H_2: Tax revenuecollection has negative influenced by high share of agricultural sector to GDP

H_3: tax revenue has positive relationship with high share of manufacturing sector to GDP;

H_4: There is significant negative relationship between inflation rate and tax revenue;

H_5: Trade openness has positive impact on tax revenue;

1.5. Significance of the study

This study may help for future researchers on this and related areas and also help for policy makers in order to be devoted to promote those variables which have positive impact on tax revenue and try to reduce the effect of those variables with negative impact on tax revenue so as to maximize tax revenue generated from the economy.In other words it will serves as a good base for the researchers, scholars or academicians who want to do further research on this and related areas in Ethiopia. The output of this study will also serve as an input for the upcoming researchers to further investigate the points under considerations. Inaddition,itisexpectedto put reliable recommendations so as to help policy makers whosejobistaxpolicy ratification toprovidesolutionforvariableidentifiedand provide some information that which variables are more significant and important in order to give adequate emphasis for those variables according to their level of impact.Thatmeansitcangiveaninsightabouteffectofthestudyvariablesontaxperformanceandenables themtogivehighattention.By doing so this study will contributes to the current literature in Ethiopia by developing a conceptual framework regarding the relationship between tax revenue and other explanatory variables.

1.6. Scope and limitation of the study

This study emphasizes on identifying macro-economic determinants of tax revenue by taking past 32 years data (1985-2016 G.C) of the dependent variable (tax revenue collected) and the independent variables (Gross Domestic Product, share of agricultural sector in GDP, share of industrial sector in GDP, inflation rate and trade openness) from different sources.

The first and the most limitation on this study were to be lack of adequate and well organized data in both dependent variable and also independent variables.The data is also not consistent from one source to another source. Especially government authorities and dependent international organizations provide data with very huge differences. So as to be more consistent personal solutions were taken to continue with one data source which is international and more reliable and accurate organizational data source. These kinds of problems are very difficult to

solve and also gives inconsistent results from software. The other and the biggest limitation of this study was lack of appropriate knowledge related to data processing with software. This kind of research needs to be comfortable with the applications of different statistical software's. Therefore, to acquire those skills sufficient skill attempts were made to do so by downloading YouTubevideos about the application of the software.After all this research paper were tried to be presented on time.

1.7. Organization of the study

The paper consists of five chapters with different sections and sub sections. The first chapter is the introduction part. Chapter tow presents the theoretical and empirical literature reviews related to tax revenue and its determinants. Chapter three provides with the methodological aspect of the study. Chapter four presents both descriptive and econometric results that show the regression results, main findings and interpretation. The final chapter of this study provides the conclusion and policy recommendation.

2. LITERATURE REVIEW

2.1 Theoretical review

2.1.1 Definition of taxation

There are many definition of taxation. Among those definitions:-

A tax is a compulsory, unrequited payment to general government (OECD, 1996).".. Taxes are unrequited in the sense that benefits provided by government to taxpayers are not normally in proportion to their payment…"".…General government consists of supra-national authorities, the central administration and the agencies whose operations are under its effective control, state and local governments and their administrations, social security schemes and autonomous governmental entities, excluding public enterprises…".A tax is a compulsory levy made by public authorities for which nothing is received directly in return (James and Nobes, 1997)."…Taxes are transfers of money to the public sector, but they exclude loan transactions and direct payments for publicly produced goods and services…"

2.1.2 The classification of tax - OECD classification

The classification by nominal source of taxation: by the way of collecting taxes; direct and indirect taxes;

The meaning of direct tax and indirect tax can vary in different contexts, which can sometimes lead to confusion. J. Econ. (1977) mentioned as direct taxes refer to those taxes that are collected from the people or organizations on which they are apparently imposed. Direct taxes are simple collecting from person directly (income tax) and indirect taxes are collecting tax indirect ways example VAT and sales tax.

Direct tax- assessed and collected directly from the individuals who are intended to bear it;

Indirect tax- not collected directly from the individuals who are intended to bear it. Here are some unique characteristics of both direct and indirect tax types;

Table 2.1: Different characteristics of direct tax and indirect tax

Direct taxes	Indirect taxes
+ It is easier to spread equally the tax burden.	+more stable and systematic source of revenue.
-delayed tax revenue.	+collection fast and constant
-high cost of gathering.	+low cost
-developed tax administration.	-can impose higher burden on poorer people.
-people try to avoid them.	-depend on the cycle.

Source: Own compilation from different sources

2.1.3 Types of Taxes

As Aggrey (2011), was illustrated types of taxes are, Personal Income Tax, Profit Tax, Capital Gains Tax, Tax on Interest Income on Deposits, Dividend Income Tax, Tax on Income from Royalties, Tax on Income from Games of Chance, Tax on Gain of Transfer of certain Investment Property, Tax on Income from Rental of Property, Tax on Income from Rendering of Technical Services, Agricultural Income Tax, Land Use Tax, Turnover Tax, Excise Tax Stamp Duty, Customs Duty, Value Added Tax, and like. Governments use different kinds of taxes and vary the tax rates so as to achieve developmental goals. This is done to distribute the tax burden among individuals or classes of the population involved in taxable activities, such as business, or to redistribute resources between individuals or classes in the population. Historically, the nobility were supported by taxes on the poor; modern social security systems are intended to support the poor, the disabled, and pensioners by taxes of those who are still working. In addition, taxes are applied to fund foreign aid and military ventures, to influence the macroeconomic performance of the economy or to modify patterns of consumption or employment within an economy, by making some classes of transaction more or less attractive. A nation's tax system is often a reflection of its collective values or/and the values of those in power. In democratic nations where the public elects those in charge of establishing the tax system, these choices reflect the type of community that the public and/or government wish to build. In countries where the public does not have a significant amount of influence over the system of taxation, that system may be more of a reflection on the values of those in power. The

resource collected from the public through taxation is always greater than the amount which can be used by the government. The difference is called compliance cost, which includes salary of staff who hired for undertaking tax collection to spend it on a specified purpose.

2.1.4 Principles of a Good Tax System

Given the many levels of taxation (federal and state) that most tax payers are subject to, it is easy to say that tax laws are changing constantly. Some of these changes are minor (changing a rate or increasing a deduction) while others may involve major substantive changes (changing from an income tax to a consumption tax or taxing online transactions). In any case there are principles to say the tax system is good.

- Efficient - A tax system should raise enough revenue such that government projects can be adequately sponsored, without burdening the economy too much (not particularly the tax payer), as not to become a disincentive for performance (internal and external investment, work returns and savings).
- Equitable - Taxation should be governed by people's *ability to pay*, that is, wealthier individuals or firms with greater incomes should pay more in tax while those with lower incomes should pay comparatively less.
- Certainty – tax rules should be clearly specified when and how a tax is to be paid and how the amount will be determined. Certainty may be viewed as the level of confidence a person has that a tax is being calculated correctly.
- Economy of calculation – the cost to collect tax should be kept to a minimum as much as possible.
- Convenience – a tax should be due at a time or in a manner most likely to be convenient to the tax payer that helps to insure compliance.
- Simplicity – tax payers should be able to understand the rule and comply with them correctly. A simple tax system better enables tax payers to understand the tax consequences of their actual and planned transactions, reduces errors and increases respect for that system.

- Neutrality – the tax law's effect on a tax payer's decision whether or how to carry out a particular transaction should be kept to a minimum.

- Transparency – taxpayers should know that a tax exists, and how and when it is imposed on them or others. Taxpayers should be able to easily determine the true cost of transactions and when a tax is being assessed or paid, and on whom.

- Minimum tax gap – a tax should be structured to minimize non compliance. The tax gap is the amount of tax owed less the amount collected. To gain an acceptable level of compliance, rules are needed. However, a balance must be struck between the desired level of compliance and the tax system's cost of enforcement and the level of intrusiveness.

- Appropriate government revenue – a tax should enable the government to determine how much tax revenue it likely will collect and when that is, the system should have some level of predictability and reliability.

2.1.5 Taxation Structure

It is good knowing some terminology to make understanding easier. The marginal rate of tax (MRT) is the percentage taken in tax of the next earned. So, if your MRT is 10%, every next part of an income you earn will be taxed at 10%. However, this doesn't make your average rate of tax (ART) 10%. Consider the following:

Say someone income is $10,000. If the first half of the income is taxed at 5%, and the second half at 15%, MRT is 15%. However, ART is [(0.05 x 5000) + (0.15 x 5000)]/10000 = 10%

2.1.6. Some concepts about taxation

Proportional Taxation

Proportional taxation means that MRT = ART, so if a person with low income is taxed at 20%, so is a person with higher income. The proportion of tax paid is always the same, though in absolute terms it goes up the higher your income.

Progressive Taxation

Progressive taxation means that MRT > ART (with MRT and ART > 0). For example, in the UK there are three rates of income tax - 10% 'starting tax', 22% 'standard tax', and 40% 'high rate of tax'. For a low income earner, ART will be around 10-22%, whereas a very high income earner will pay more like 30-40% ART. Thus, higher income earners pay a larger proportion of their income in tax than low income earners.

Regressive Taxation

This is very rarely practiced intentionally by a government, as it would be extremely unpopular and would be seen as supporting wealthy, high income individuals over more needy households. However, indirect taxation could be said to partly support this. Very high income earners may spend a lower proportion of their income on goods and services, and so pay proportionally a fewer taxes as a percentage of their income spent on those goods and services (jacek 2016).

Taxation and Economic Growth

According to Solow (1956) these relationships are often addressed in an accounting framework. In his approach, the output, of an economy, typically measured by GDP, is determined by its economic resources such as the size and skill of its work force, and the size and technological productivity of its capital stock, for instance, a country like the United Kingdom might be expected to have a greater per capita output than Zimbabwe because its (per capita) capital stock is so much larger and more technologically advanced and its workers have more skills, or human capital. However, the growth rate of economic output will therefore depend on the growth rate of resources such as physical capital and human capital as well as changes in the underlying productivity of these general inputs in the economy.

Firstly, higher taxes will discourage the investment rate, or the net growth in the capital stock, through high statutory tax rates on corporate and individual income, high effective capital gains tax rates, and low depreciation allowances. Secondly, taxes may ease labor supply growth by discouraging labor force participation or hours of work, or by distorting occupational choice or the acquisition of education, skills, and training. Thirdly, tax policy has the possibility to

discourage productivity growth by attuning research and development and the development of venture capital for "high-tech" industries, activities whose spillover effects can potentially enhance the productivity of existing labor and capital. Fourthly, tax policy can also influence the marginal productivity of capital by distorting investment from heavily taxed sectors in to more lightly taxed sectors with lower overall productivity Harberger, (1962, and 1966). Finally, heavy taxation on labor supply can distort the efficient use of human capital by discouraging workers from employment in sectors with high social productivity but a heavy tax burden. However, a number of recent theoretical studies have used endogenous growth models to suggest the effects of a fundamental tax reform on economic growth. All of these studies conclude that diminishing the distorting effects of the high tax structure would permanently increase economic growth. Unfortunately, the magnitude of this increase in economic growth is highly sensitive to certain assumptions embodied in the economic models, with little empirical guidance or consensus about key parameter values. Consequently, these studies reached substantially different conclusions concerning the magnitude of the boost in growth rates.

Lucas (1990) calculated that a revenue-neutral change that eliminated all capital income taxes while raising labor income taxes would increase growth rates negligibly. Jones, Manuelli and Rossi (1993) calculated that eliminating all distorting taxes would raise average annual growth rates by a whopping four to eight percentage points. Thus an "across-the-board" reduction in distortionary tax rates in these models, rather than complete elimination of distortionary taxes, would be expected to have a smaller positive effect on economic growth. Mendoza, Razin, and Tesar (1994) came up with a simulation model which suggests that relatively modest differences in economic growth of roughly 0.25 percentage points annually as the consequence of a 10 percentage point change in tax rates. These simulation models of endogenous growth fail to provide a comfortable range of believable effects of taxes on growth and thus tend to raise more questions than they answer. Habitually, simulation analysis is performed in terms of a single flat-rate tax in the context of a (single) representative agent model. Ultimately, one needs to consider the empirical record to make informed judgments about whether tax policy exerts a strong influence on economic growth.

Taxation and Government Expenditure

Fiscal policy is the exercise of government expenditure and revenue collection to influence the economy. Turnovsky, (1996) explained fiscal policy can be contrasted with the other main type of macroeconomic policy, monetary policy, which attempts to stabilize the economy by controlling interest rates and the money supply. The two main instruments of fiscal policy are government expenditure and taxation (G and T). However, changes in the level and composition of taxation and government spending can have effect on the following variables in the economy.

Aggregate demand and the level of economic activity: - Fiscal policy refers to the use of the government budget to influence these three: economic activity, economic effects of fiscal policy and fiscal strait jacket. These three possible stances of fiscal policy are neutral, expansionary and contractionary. In most countries where government spending is fully funded by tax revenue and hence the overall has budget outcome has a neutral effect on the level of economic activity. An expansionary scenario of fiscal policy engages government spending exceeding tax revenue. A contractionary fiscal policy occurs when government spending is lower than tax revenue. However, these definitions can be misleading because, even with no changes in spending or tax laws at all, cyclical fluctuations of the economy can result in cyclical fluctuations of tax revenues and of some types of government spending, altering the deficit situation; but these are not considered to be policy changes. Therefore, for purposes of the above definitions, "government's spending" and "tax revenue" are normally replaced by "cyclically adjusted government spending" and "cyclically adjusted tax revenue". Thus, for instance, a government budget that is balanced over the course of the business cycle is considered to represent a neutral fiscal policy stance.

According to Ariyo (1997),governments do spend money on a wide variety of things, from the military and police to services like education and health care, as well as transfer payments such as welfare benefits. This expenditure can be funded in a number of different ways, such as borrowing money from the population or from abroad, consumption of fiscal reserves and sale of fixed assets like a government bills benefit from printing money, etc. All of these except taxation are forms of deficit financing. Borrowing or fiscal deficit is often funded by issuing bonds, like

treasury bills or consuls and gilt-edged securities. These pay interest, either for a fixed period or indefinitely. When the interest and capital repayments are too large, a nation may default on its debts, usually to foreign creditors. Consuming prior surpluses; a fiscal surplus is often saved for future use, and may be invested in local financial instruments, until needed. When income from taxation or other sources falls during an economic slump, reserves allow spending to continue at the same rate without incurring additional debt. Thus, economic effects of fiscal policy can be seen when governments use fiscal policy to influence the level of aggregate demand in the economy, in an effort to achieve economic objectives of price stability, full employment, and economic growth. However, Keynesian (1980s) economics suggests that increasing government spending and decreasing tax rates are the best ways to stimulate aggregate demand. It's normally used in times of recession or low economic activity as an essential tool for building the frame work for strong economic growth and working towards full employment. Governments can use a budget surplus to do two things: to slow the pace of strong economic growth and to stabilize prices when inflation is too high. The Keynesian theorist posits that removing spending from the economy will reduce levels of aggregate demand and contract the economy, thus stabilizes prices. Economists debate the effectiveness of fiscal stimulus. The argument mostly center on crowding out, phenomena where government borrowing leads to higher interest rates that offset the simulative impact of spending. When the government runs a budget deficit, funds will need to come from public borrowing, overseas borrowing, or monetizing the debt. However, when governments fund a deficit with the issuing of government bonds, interest rates can increase across the market, because government borrowing creates higher demand for credit in the financial markets. This results in lower aggregate demand for goods and services, contrary to the objective of a fiscal stimulus.

However, while the Neo classical economists generally emphasize crowding out, the Keynesians argue that fiscal policy can still be effective especially in a liquidity trap where, they argue, crowding out is minimal. Most classical and neo classical economists have argued that crowding out completely negates any fiscal stimulus "Treasury View" and this has been rejected by the Keynesian economics. This Treasury View refers to the theoretical positions of classical economists in the British Treasury, who opposed Keynes's call in the 1930s fiscal stimulus. In

view of the classical economist, expansionary fiscal policy also decreases net exports, which has a mitigating effect on national output and income. Foreign capital from foreign investors is attracted, when interest rates is increased through increase government borrowing. This is made possible because, all other things being equal, the bonds issued from a country executing expansionary fiscal policy now offer a higher rate of return. Thus, companies wanting to finance projects must compete with their government for capital so they offer higher rates of return. To purchase bonds originating from a certain country, foreign investors must obtain that country's currency. Hence, when foreign capital flows in to the country undergoes fiscal expansion, demand for that country's currency increases. The increased demand results in the appreciation of that country's currency. Once the currency appreciates, goods originating from that country now cost more to foreigners than they did before and foreign goods now cost less than they did before. Accordingly, exports decrease and imports increase. Other possible problems with fiscal stimulus include the time lag between the implementation of the policy and detectable effects in the economy, and inflationary effects driven by increased demand Teera, (2002).

2.1.7 History of taxation in Ethiopia

An over view of the tax system and the tax reform in Ethiopia The first major change in Ethiopia's tax system was initiated in the post-Second World War period (between 1942-1944) the years 1947-52 covering its second stage. These changes were generally discretionary, including amendments to property taxes (land and cattle). Broad-based taxes on goods and services were also introduced in the mid 1950s.

Later in the decade and in the early 1960s, changes were also made in the rate and structure of taxes, especially on income. In the post-revolution period (1974-91), particularly during 1976-79, significant major changes on the rate and structure of all types of taxes were made. These involved widening the land tax base, introducing capital and surplus transfers from nationalized firms, as well as certain minor arrangements on other taxes (Wogene 1994).

Leaving aside this brief description of the evolution of the tax system before the 1991/2 reform, the subsequent taxing system in Ethiopia can be divided into three broad categories: (i) taxes on

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income and profits, (ii) taxes on goods and services and (iii) taxes on international trade. Most of these taxes have been reformed and amended in the last decade following the general 1992 liberalization (or reform) policy. Some institutional reforms aimed at enhancing the government's capacity to raise tax revenue have also been made.

Resources were allocated among the various sectors of the economy differently in the imperial and revolutionary periods. Under the emperor, the government dedicated about 36 percent of the annual budget to national defense and maintenance of internal order. Toward the end of the imperial period, the budgets of the various ministries increased steadily while tax yields stagnated. With a majority of the population living at a subsistence level, there was limited opportunity to increase taxes on personal or agricultural income. Consequently, the imperial government relied on indirect taxes (customs, excise, and sales) to generate revenues. For instance, in the early 1970s taxes on foreign trade accounted for close to two fifths of the tax revenues and about one-third of all government revenues, excluding foreign grants. At the same time, direct taxes accounted for less than one-third of tax revenues.

The revolutionary government changed the tax structure in 1976, replacing taxes on agricultural income and rural land with a rural land-use fee and a new tax on income from agricultural activities. The government partially alleviated the tax collection problem that existed during the imperial period by delegating the responsibility for collecting the fee and tax on agriculture to peasant associations, which received a small percentage of revenues as payment. Whereas total revenue increased significantly, to about 24 percent of GDP in 1988/89, tax revenues remained stagnant at around 15 percent of GDP. In 1974/75, total revenue and tax revenue had been 13 and 11 percent of GDP, respectively. Despite the 1976 changes in the tax structure, the government believed that the agricultural income tax was being underpaid, largely because of under assessments by peasant associations Ethiopian Chamber of Commerce and Ethiopian Business Development Services Network (ECC, 2005).

The government levied taxes on exports and imports. In 1987 Addis Ababa taxed all exports at 2% and levied an additional export duty and surtax on coffee. Import taxes included customs duties and a 19% general import transaction tax. Because of a policy of encouraging new capital

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investment, the government exempted capital goods from all import taxes. Among imports, intermediate goods were taxed on a scale ranging from 0 to 35 percent, consumer goods on a scale of 0 to 100 percent, and luxuries at a flat rate of 200 percent. High taxes on certain consumer goods and luxury items contributed to a flourishing underground economy in which the smuggling of some imports, particularly liquor and electronic goods, played an important part. Although tax collection procedures proved somewhat in effective, the government maintained close control of current and capital expenditures. The Ministry of Finance over saw procurements and audited ministries to ensure that expenditures conformed to budget authorizations.

The series of tariff and tax reform program shave helped to increase both Federal Government and national revenue. As per the reports of the Ministry of Revenue, the Federal Revenue has increased to Birr 6.7 billion in 2002/2003 from Birr 2.54 billion in 1993/94 as the result of which federal revenue as percentage of the GDP increased from 8.97% in 1993/94 to 11.87% in 2002/03. The increase in revenue mainly attributes to the modest increase in both direct and indirect taxes, mainly the foreign trade taxes. As well, National tax revenue as percentage of GDP has increased to 15.1% in 2002/03 from 10.9 in 1993/94. Despite, the series of reforms and increase in revenue, the overall budget deficit with and without grant has been increasing. For example, the overall budget deficit without grants as percent of GDP has increased from- 5.2% in 1996/97 to- 14.5% in 2002/03. This shows that performance of revenue collection in Ethiopia has been low compared to the rest of Sub-Saharan African countries which is over 23% of the GDP.

2.1.8 Macro-economic determinants of tax revenue

Many literatures suggest there are various macro-economic determinants of tax revenue among those in this particular research we are going to deal with variables like the level of economic development represented by GDP, Trade Openness, Inflation rate, Share of Agriculture in GDP, and Share of Manufacturing in GDP.

2.2 Empirical review

In the empirical literature, several variables have been considered as determining factors of tax revenues. Researchers have included several variables such as per capita GDP, the sartorial composition of output, the degree of trade and financial openness, and the ratio of foreign aid to GDP, the ratio of overall debt to GDP, a measure for informal economy, and some institutional factors such as degree of political stability and corruption as potential determinants of revenue performance. The empirical findings have been mixed because of their sensitivity to the set of countries and the sample period.

Many empirical studies have been undertaken to assess tax performance across different countries. Most of the studies have used tax share in GNP/GDP or tax ratio as the dependent variable with different combinations of explanatory variables.

Lotz and Morss (1967) used the data of developed and developing countries to find the ratio of tax revenue to GNP. He used per capita GNP and openness for this. His results showed the positive and statistically significant effect for both per capita GNP and for openness. Tanzi (1987) found only the per capita income effect positive and significant by taking the data of only developing countries.

Chelliah et al. (1975) by taking the data of 47 countries during for period 1969-1971 regress the tax share in GNP on agriculture share, mining share and export share. The results showed the negative and significant effect for agriculture share, positive and significant effect for mining share and export share. Tait et al. (1979) took the data of 47 countries for period 1972-1976 and found the same results.

Bird et al. (2008) found that Latin American countries show consistently lower tax effort compared to other developing or transition countries. Performance in African countries shows a mixed trend. Some countries collect as little as half while others collect up to 2 to 3 times what they would be expected to (OECD, 2010). The latter group include to a large degree of those countries having a high share of resource-related tax revenue. Thus, estimates of tax effort for

some resource-rich countries turn out to be quite sensitive to whether resource-related tax revenues are considered or not. Using a tax effort measure that excludes resource-related tax revenues is revealing: more than half of the African countries (22 out of 42) collect more or what is expected. This suggests that in quite a number of countries domestic revenue mobilization is not constrained by the tax system but more by GDP growth and broader development.

From a policy perspective there is an important distinction between countries with a substantial share of resource-related tax revenues and those without. Resource revenue provides an opportunity for reducing distortion taxation that may have a negative impact on economic activity, but it also provides the opportunity for maintaining highly inefficient subsidy programmed (Collier et. al., 2005). Bornhorst et al. (2009) found that countries that receive large revenues from the exploitation of natural resource endowments are likely to reduce their domestic tax effort considerably. This is not necessarily worrying as reduced domestic tax burden could foster private sector activities consistent with an improvement in development prospects.

Leuhold (1991) and Stotsky and Wolde Mariam (1997) examined the tax share for African countries by taking the share of agriculture in income, mining share, per capita income and export ratio as its determinants. Their results showed that agricultural share has negative; mining share has positive while the share of foreign trade and the share of foreign grants and loans have also positive and statistically significant relation.

Teera (2002) examined the tax system and tax structure of Uganda to investigate the factors effecting tax revenue in the country. He used the time series data of the period 1970 to 2000 and estimated a model. His results showed that agriculture ratio, population density and tax evasion affect all type of taxes. GDP per capita showed the surprising negative sign. Tax evasion and openness (as measured by import ratio) showed the significant negative impact. Aid variable showed positive sign since aid in Uganda always supported imports especially raw material so not surprisingly.

Per capita income is a proxy for the overall development of the economy and is expected to be positively correlated with tax share as it is expected to be a good indicator of the overall level of economic development and sophistication of the economic structure. Moreover, according to Wagner's law, the demand for government services is income–elastic, so the share of goods and services provided by the government is expected to rise with income. The sectorial composition of output also matters because certain sectors of the economy are easier to tax than others. For example, the agriculture sector may be difficult to tax, especially if it is dominated by a large number of subsistence farmers. Imports and exports are amenable to tax as they take place at specified locations. Furthermore, most developing countries shifted away from trade taxes in the 1990s, which was largely due to the wide spread liberalization of trade undertaken under the Uruguay Round. The effect of trade liberalization on revenue mobilization may be ambiguous. If this liberalization occurs primarily through reduction in tariffs then one expects losses in tariff revenue. On the other hand, Keen and Simone (2004) argued that, revenue may increase provided trade liberalization occurs through reduction of quotas, eliminations of exemptions, reduction in tariff peaks and improvement in customs procedure.

Bahl (2003) by using the data of OECD and less developed economies explained the determinants of tax revenue. He used the non-agricultural share of GDP, openness and the rate of population growth all of which showed the positive and statistically significant result. Simple correlation between tax effort and the size of shadow economy showed the negative but statistically significant result.

Madhavi (2008) used the advanced estimation techniques with an unbalanced panel data for 43 DCs over the period 1973-2002 including Pakistan. His results showed that aid had a negative effect, non-tax revenue had also negative effect while agriculture sector share had positive but insignificant coefficient. Trade sector share had a positive effect and economically active female variable had a net adverse but insignificant effect while the old-age portion of population showed negative association for both income and sales tax. Extent of urbanization and literacy rate both showed positive effect. Population density, monetization and inflation rate remained negatively

correlated. Inverse of GDP per capita was strongly and negatively correlated with the level of taxation. Net effect of political rights and civil liberties was significant.

The reform pattern of Ethiopia in the past two decades clearly reflects international donors influence, particularly that of the IMF, and a strong alignment of objectives. In the 1990s the government largely focused on the reduction of trade taxes that culminated in the abolishment of export taxes in the early 2000s. This was in line with the international push towards liberalization promoted by WB and IMF at that time. In 2001 the tax administration, previously managed by a Revenue Board, was upgraded to Ministry of Revenue, which allowed it to have direct access to donors' support. However, the major reform of the past two decades happened in 2002, encouraged and supported by development partners. The reform concerned domestic taxes, both direct (Proclamation 286/2002) and indirect (Proclamation 285/2002). Reforms on direct taxation reduced the corporate income tax rate from 35 per cent to 30 per cent, which is in line with the IMF's 'conventional wisdom' (IMF 2013)of keeping tax rates low and widening the base, rather than having relatively high rates applied to fewer taxpayers. Moreover the new laws introduced taxpayer identification numbers (TIN), deductions for the calculation of business profits, and loss carry forwards, amongst others.(Alemayehu et al.2005). The main innovation on indirect taxation was surely the introduction of the value added tax (VAT) from January 2003 with a rate of 15 per cent. Again, the focus on domestic taxation of the 2002 reform is fully in line with the more recent concern of donors on the need to recover potential losses in trade taxes with an increase in domestic indirect taxes particularly. Therefore the international community, and particularly the IMF, strongly supported the introduction of VAT as a way to broaden the tax base, improve efficiency and compliance, and generate additional revenue, amongst other potential advantages.

Whether these advantages actually materialized in practice is still unclear and certainly the VAT encountered some implementation problems in Ethiopia. In the first few years following the reform indirect tax remained relatively low, except for an initial increase. The main issue was compliance in urban areas, as new taxpayers in the 'modern sector' did not have the same history of taxpaying that had developed in rural areas. A top government official noted that:

Levies on farmers have always been there. Refusing to pay was seen as insubordination and nobody would dare to do that. Paying tax was culturally accepted.

However, in the cities, where the bulk of economic activity occurs, the situation was much different. Taxpayers were not complying and the government lacked the administrative tools to enforce the law, which were eventually introduced in 2008. The disengagement of the EPRDF from the private sector, that for many years was seen as rent-seeking rather than a partner in the development process, might have contributed to reinforcing low compliance. The reform not only found the resistance of taxpayers. Also, tax administrators did not collaborate on the implementation of improved systems of collection that would undermine the unofficial benefits that they were able to extract from a mismanaged system.

These implementation problems and the stagnation of tax revenue were certainly a trigger for the 2008 reform of tax administration. The most important innovation was the establishment of the Ethiopian Revenue and Customs Authority (ERCA). This greatly improved the status and efficiency of revenue administration that was now managed under a single and independent authority. Furthermore, the implementation of VAT was complemented with the introduction of electronic sales registration machines. These would record all firms' transactions and report them directly to the newly established ERCA, in a bid to push for broader adoption of IT systems throughout the authority. Finally, a campaign against tax evasion included the imprisonment of evaders and a policy of 'naming and shaming' them in the media. Well-known business people and prominent individuals were prosecuted and often jailed over tax matters, with extensive public coverage of such news. These innovations were accompanied by technical assistance (TA) by donors, which are seen as a major driver of capacity development. For example, the digitalization of tax records and the adoption of new IT systems to manage this data were supported by foreign technical assistance through a Canadian consultancy firm; while recently HMRC has supported the development of the audit and risk management function. Generally, the 2008 administrative reform succeeded in increasing tax revenues, with the nominal growth rate just slightly falling short of 50 per cent in 2009 (Giulia 2016).

2.2.1 Empirical evidences in case of Ethiopia

In Ethiopia there are some researches done on tax issues with different titles among them some o them are mentioned below Anware(2014) on the title Determinants of tax revenue performances in Ethiopia as mini research for Partial Fulfillment of the Requirements for the course Professional Training Program for Economists (a Case Study in Ethiopian Revenues and Customs Authority) the researcher used time series data set that consists of 21 years. For the time period covered 1990/91 to 2010/11 with identifying six variable industry, agriculture, inflation, GDP per capital income, export and import he concluded that structural factors such as exports of goods and services (% of GDP) and import of goods and service (% of GDP) significantly affect tax revenue performance of Ethiopia.

Tilahun(2014) with the title Determinants of Tax Compliance Behavior in Ethiopia: The Case of Bahir Dar City Taxpayers with the objective to identify factors that determine tax compliance behavior has been open for empirical investigation. Accordingly, the researcher used one-way ANOVA, two samples and one sample T- test, the data was collected using structured questionnaire. The results revealed that perception on government spending; perception on equity and fairness of the tax system; penalties; personal financial constraint; changes on current government policies; and referral group (friends, relatives etc.) are factors that significantly affect tax compliance behavior. However, gender and probability of being audited have no significant impact on tax compliance behavior. Finally, the researcher concluded that older people will comply less if there is no equity and fairness in the tax system and any changes in government policy on fuel prices, electricity and water rates are not favorable.

Delessa (2014) on the research title Tax Reforms and Tax Revenues Performance in Ethiopia the purpose of the study was to analyze and compare tax revenues performances of the two governments in power in Ethiopia during the last 39 years. Descriptive analysis is used to compare different categories of tax performance of the Derg and Ethiopian People's Revolutionary Democratic Front (EPRDF) regimes in terms of tax revenues mobilization is tax to GDP ratio. In light of this major tax categories of tax to GDP and total tax revenues ratios over the period of 1974/75 to 1912/13 (39 years) were computed and analyzed. In addition

comparison has been made between pre and post tax reforms to compare tax system flexibility in terms of raising tax revenues during the EPRDF regime. The period after 2002/03 was considered as post comprehensive tax reforms years. The researcher concluded the comparison of two governments' different categories of tax ratios shows a slight increment from an average 3.77 percent to 9.95 during EPRDF period. Comparing pre and post-tax reforms during the period 1991/92 to 2012/13 the ratios of different category tax revenues show insignificant change for post comprehensive tax reform period. Comparing direct versus indirect tax categories, direct tax shows the tendency of declining contrary to the comprehensive tax reform main objective which gave due attention to increase the share of the direct tax to total revenues. The overall analysis of researcher reveals that tax reforms failed to boost total tax revenues and to bring tax structure change from indirect tax to direct tax.

Stotsky and WoldeMariam (1997), suggests that the shares of agriculture in GDP and mining in GDP are both negative and significantly related to the tax share, and that the export and import shares in GDP are both positive and significantly related to the tax share whereas per capita income is not significant.

Agbeyegbe et al. (2004) investigation show that, trade liberalization, agricultural share, industrial share, government consumption, and terms of trade exert a positive effect on total tax revenue. Inflation exerts a negative effect and unexpected positive effect of agricultural hare by the influence of exports in providing a tax handle. In other side the sign of agricultural sector share turns to negative when the independent variable is income tax revenue.

3. RESEARCH METHODOLOGY

3.1 Research Design and Approach

The main objective of the study is to identify the macro-economic determinants and their track of impact of tax revenues in Ethiopia. Therefore, to attain this general objective,longitudinal explanatory design applied which required a collection of the same data across period of time.

3.2 Data type and source

This research employs quantitative data type and uses secondary data (i.e.; 32 years from 1985 to 2016 according to Gregorian calendar) from many sources to achieve the objectives defined in the above section. Some of the sources are Ministry of Finance and Economic Cooperation (MoFED), Central Statistics Agency (CSA), Ethiopian Revenues and Customs Authority (ERCA), International institution annual reports and database (WB and IMF).

3.3 Method of data analysis

This study employs both the descriptive and econometric methods of data analysis. Descriptive statistical methods used to briefly explain the macroeconomic performances and trends of the variables used in the model and some descriptive statistics summaries such as mean or average values, minimum values, maximum values and standard deviations are also included. The econometrics analysis includes testing of important tests, the estimation of the model and interpretation of results based on econometric model results. To analyze the data, the statistical software Stata version 12.1 is used.

3.3.1 Econometrics model specification

To analyze statistically the determinants of tax revenue in Ethiopia, an estimate of a model will help to see the functional relation of tax revenue to economic development and structure of the economy. Therefore this paper will apply a regression model using Johansen co-integration model to investigate the long run convergence or divergence to the level of equilibrium within

variables and Vector Error Correction Model (VECM) to assess the short run magnitude and direction of relation between variables that determine tax revenue and check the relevance of each determinants established by existing body literature in the Ethiopian context which are independent variables namely Gross Domestic Product, share of agricultural sector in GDP, share of industry sector in GDP, inflation rate and trade openness and on the dependent variable tax revenue measured by its annual performance. Therefore in this study the model is specified as:

$TR_t = f(GDP_t, AGRI_t, IND_t, INF_t, OPP_t)$ …………………………………….…………..(1)

More specifically the log transformation of the model is as follows:

$LTR_t = \alpha + \beta_1 LGDP_t + \beta_2 LAGRI_t + \beta_3 LIND_t + \beta_4 LINF_t + \beta_5 LOPP_t + \varepsilon_t$………………………… (2)

Where, α is intercept term and $\beta1, \beta2,$………………………………$\beta5$ are long run coefficients.

LTR_t = Natural logarithm of tax revenue at time t

$LGDP_t$ = Natural logarithm of gross domestic product at time t

$LAGRI_t$ = Natural logarithm of agriculture value added (%GDP) at time t

$LIND_t$ = Natural logarithm of industrial value added (%GDP) at time t

$LINF_t$ = Natural logarithm of inflation at time t

$LOPP_t$ = Natural logarithm of openness at time t

All variables in the model are transformed into logarithm form and hence log linear form of the model is used for tax revenue model as opposed to linear model. This is because log linear model is preferred to the linear model in that log linear model helps to control the size of data and results in consistent and reliable estimates (Worku, 2010). Furthermore, log linear model produces better results than linear form of the model; i.e., logs are used in economics because the estimated coefficients in log regressions have a good interpretation. Economists often think in

terms of elasticity's, and log regressions have coefficients that estimate elasticity's. It helps to interpret as percentage change instead of as a marginal effect (Benoit, 2011).

3.4. Definition of variables

1. GDP

Economic development is assumed to bring about both an increased demand for public expenditure (Tanzi, 1987) and a larger supply of taxing capacity to meet such demands (Musgrave, 1969). A higher per capita income reflecting a higher level of development is held to indicate a higher capacity to pay taxes as well as a greater capacity to levy and collect them (Chelliah, 1971). There is also the consideration that, as income grows countries generally become more urbanized. Urbanization brings about a greater demand for public services while at the same time facilitating tax collection (Tanzi, 1987).

2. Share of Agriculture in GDP

Agriculture is considered to be a salient feature regarding the structure of the economy and as Tanzi (1992) asserts, a country's economic structure is one of the factors that could be expected to influence the level of taxation. For developing countries, the share of agriculture may be an important influence on the tax share, from both the demand and supply point of view (Tanzi, 1992). On the supply side, it is very difficult to tax the agricultural sector "explicitly", though it is often very heavily taxed in many implicit ways such as; import quotas, tariffs, controlled prices for output, or overvalued exchange rates (Bird, 1974; Ahmad and Stern, 1991; Tanzi, 1992). On the other hand, small farmers are notoriously difficult to tax and a large share of agriculture is normally subsistence, which does not generate large taxable surpluses, as many countries are unwilling to tax the main foods that are used for subsistence (Stotsky&Wolde Mariam, 1997). On the demand side, since many public sector activities are largely city - oriented, it may be assumed that the more agricultural is a country, the less it will have to spend for governmental activities and services.

Hence as the share of agriculture in GDP rises, the need for total public spending and so for tax revenue may fall.

3. Share of Industry in GDP

Manufacturing enterprises are easier to tax than agricultural enterprises since business owners typically keep better books of accounts and records. Manufacturing can generate larger surpluses if production is efficient. Therefore the variable is positively related to the tax ratio.

4. Inflation rate

As prices rises the real value of exemption and standard deduction declines. As a result, the level of real income at which the tax begins to apply falls. Moreover, as price rise, the real value of bracket limits declines, so that the level of bracket rates applicable to a given level of real income rises. For both reasons, income tax liability increases more rapidly than do prices, i.e., they increase in real terms.

5. Trade openness

Under Structural Adjustment Programs (SAPs) suggested by the World Bank and the IMF, countries have been shifting from destructive protective policies to free trade. Trade liberalization is defined as "the total or part elimination of trade barriers such as quotas, import duties, tariffs and non-tariff barriers imposed by governments on imported and exported goods" (Marchant and Snell, 1997).

The impact of trade liberalization is an empirical question because when trade liberalization reduces import duties and other trade restrictions then there will be revenue loss but if volume of trade increases then tax revenue can increase (Tanzi, 1989).

3.5. Estimation of the model

In this study quantitative research method has been used and time series regression analysis has been used. Due to a non-stationary behavior of many time series data, the appropriate transformation of data to stationary form is needed after checking of being non-stationary. The

stationary behavior of variables included in the model is tested by using ADF test to avoid spurious correlation results, and the test result showed all variables were stationary at first difference.

UNIT ROOT TEST

Test for stationary is a prerequisite for consistent and valid inference of time series models and co-integration analysis. Unit root implies that the time series data are non-stationary while absence of a unit root shows that the time series data are stationary. The results of using non-stationary time series may be spurious. This stationaryity of the data is checked by using Augmented Dickey Fuller (ADF).

DIAGNOSTIC TESTS AND MODEL STABILITY

After estimation of the short run dynamic model, diagnostic tests like, serial correlation, heteroscedasticity, RESET test computed and reported

4. RESULTS AND DISCUSSIONS

This chapter contains both the descriptiveand econometrics analysis. Under the descriptive statistics the trends and overall performances of the variables of interest are presented. The statistical tools such as tables and graphs are used to describe the variables used in the model. The econometric analysis begins by testing the necessary tests such as stationary tests,diagnostic tests and bound test. After estimation has been made the interpretation and discussion are continued based on the model results.

4.1. Descriptive statistics results

4.1.1. Trend and growth of tax revenue in Ethiopia (1985 – 2016)

According to WB data the amount of tax collected in 1985 was 1,593,020,000.00 birr and in 2016 it arrive at 126,716,721,603.00 birr. This shows as a huge amount which was added on the amount of tax collection with this particular time period. When we see the average growth rate of tax revenue collected in Ethiopia between the time periods 1985-2016 was 15% annually.
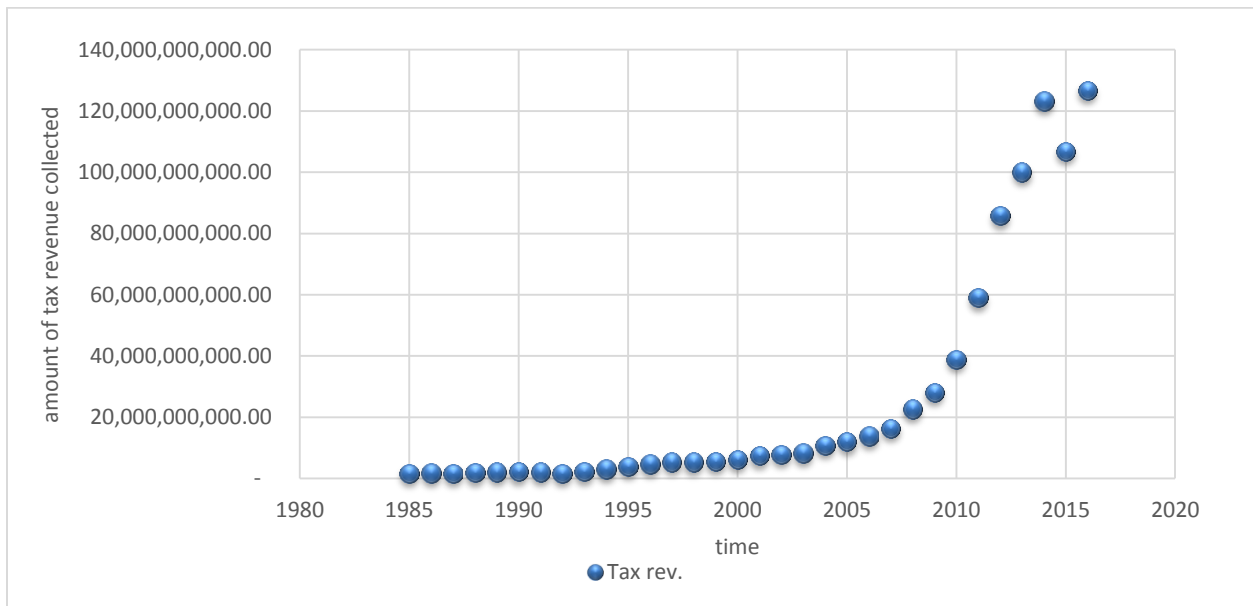

Figure 4.1: Trend and growth of tax revenue of Ethiopia

Source: Own computation based on WB data(1985-2016)

From the above graph we can simply get annual growth rate of the amount of Ethiopian tax revenue i.e.; 0.150 or 15%. In between that time period there was little ups and downs. But after a structural policy change in 2005 the path shows a boost in the amount of tax collected especially the policy change actively react on the tax revenue performance after 2010. In 2015 the figure shows a downward track, this may because of unstable condition of the country. On that year there was unrest movement in almost every direction of the country. That unrest affects many business activities like construction, commercial farming (i.e.; coffee farms, flower farms); industries (i.e.; cement, sugar, textile) were highly affected by that movement. This was the main reason to the declining root of tax revenue. Even though it is still lower when we compare the tax to GDP ratio with SSC, in more recent years the amount of tax revenue collected is very incredible to show this more briefly let us cut the time period 1985-2016 in to two groups. (I.e. 1985-2000 as one group and 2001-2016 as the second group).

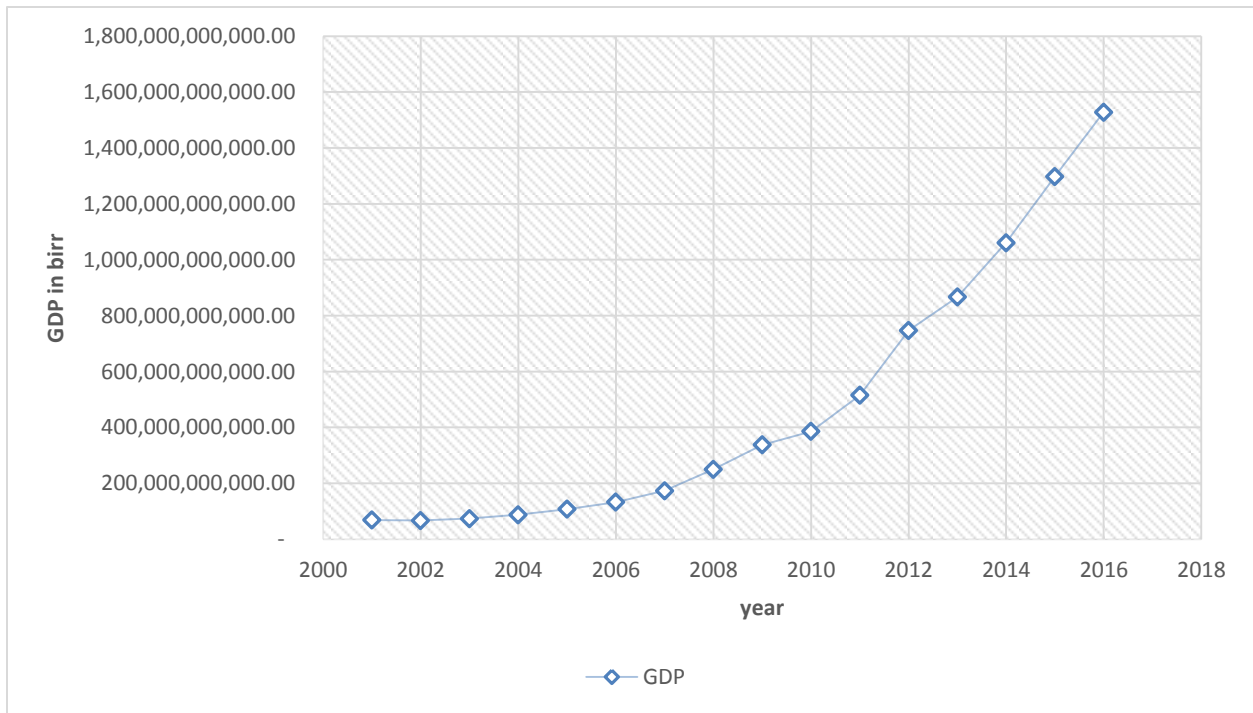Table 4.1: Average growth rate of tax revenue with two time groups

Time group	Average growth rate
1985-2000	10%
2001-2016	22%
Total (1985-2016)	15%

Source: Own computation based on WB data

From the above table we can compare the two time groups on the first group tax revenue grows on average by only 10% annually which is very slower rate because in that time group, the transition period exists. During the derg and the transition period tax collection performance was very weak and the economy by itself cannot generate sufficient tax to be collected. After the current regime took power and stabilizes the country the economy recovers and expands and after business emerges, import-export facilitated, industries planted, foreign investors comes in. the other reason was different policy changes were made by the new regime including tax reform; developmental state model; and many other policy packages were introduced to the country. That's why the average growth rate was shifted to 22% annually.

4.1.2. Trend and growth of GDP of Ethiopia (1985 – 2016)

Based on the WB data Ethiopian GDP was 19,625,339,800.00 birr in 1985 and grows by 13.8% on average and reaches 1,528,044,234,000.00 birr in 2016. As of the WB data shows incredible increase during that period i.e.; 1985-2016. To show this in correlation with the growth of tax revenue we have to divide the time period in to two as we made in the above part of the discussion.

Source: Own computation based on WB data(2000-2016)

Figure 4.2: Trend and growth of Ethiopian GDP

The growth rate function of Ethiopian GDP shows 23.2% was the average growth rate of GDP between 2001 up to 2016. The reason for that high rate of growth was mainly political and economic stability of the country in turn encourage local and foreign investors to involve in a wide range of economic activities.

Table 4.2: Growth rate of Ethiopian GDP with two time groups

Time group	Average growth rate
1985-2000	8.8%
2001-2016	23.2%
Total (1985-2016)	13.8%

Source: Own computation based on WB data

From the table we can trace that there was very large gap in terms of the average growth rates between the two time groups because of policy shift to developmental state which encourage the economic activity and boosts the GDP of the nation.

4.1.3. Trend and growth of import-export in Ethiopia (1985 – 2016)
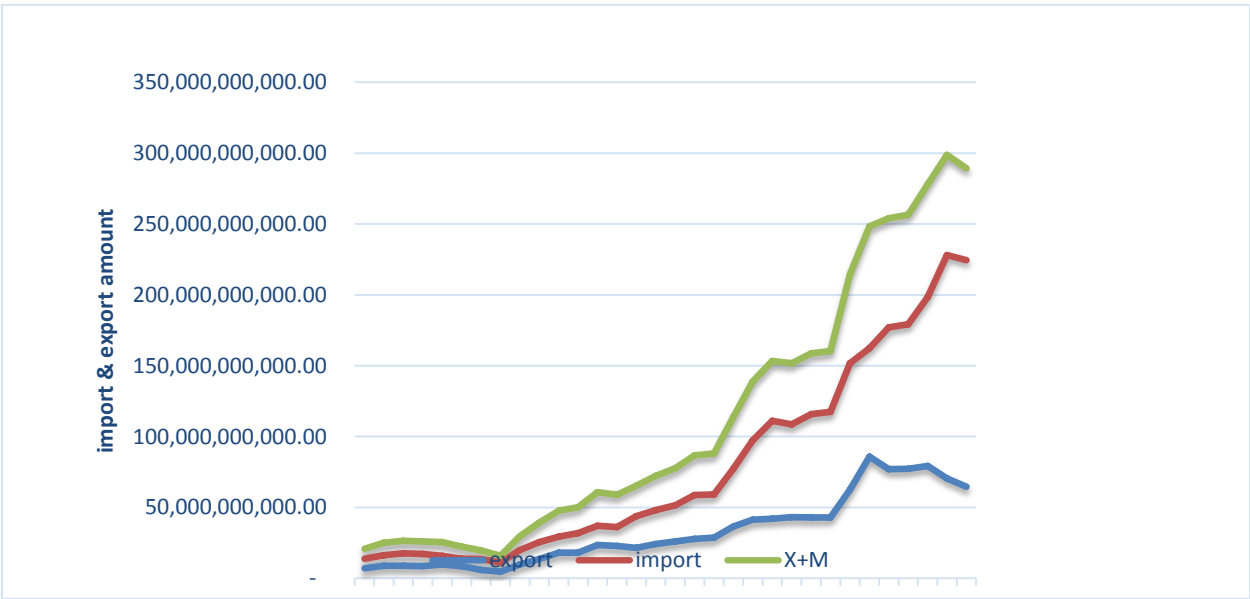
Source: Own computation based on WB data(1985-2016)

Figure 4.3: Trend and growth of import and export of Ethiopia

According to World Bank data the amount of the sum of import and export was 20,811,160,331.82 birr in 1985 and riches to 289,361,904,761.91 birr in 2016. And also we can compute the growth function of X + M. The average growth rate of import-export from 1985 to 2016 was 9.7% annually. To show this in detail with tow time group, let us divide the whole time period in to two groups i.e. 1985-2000 and 2001-2016.
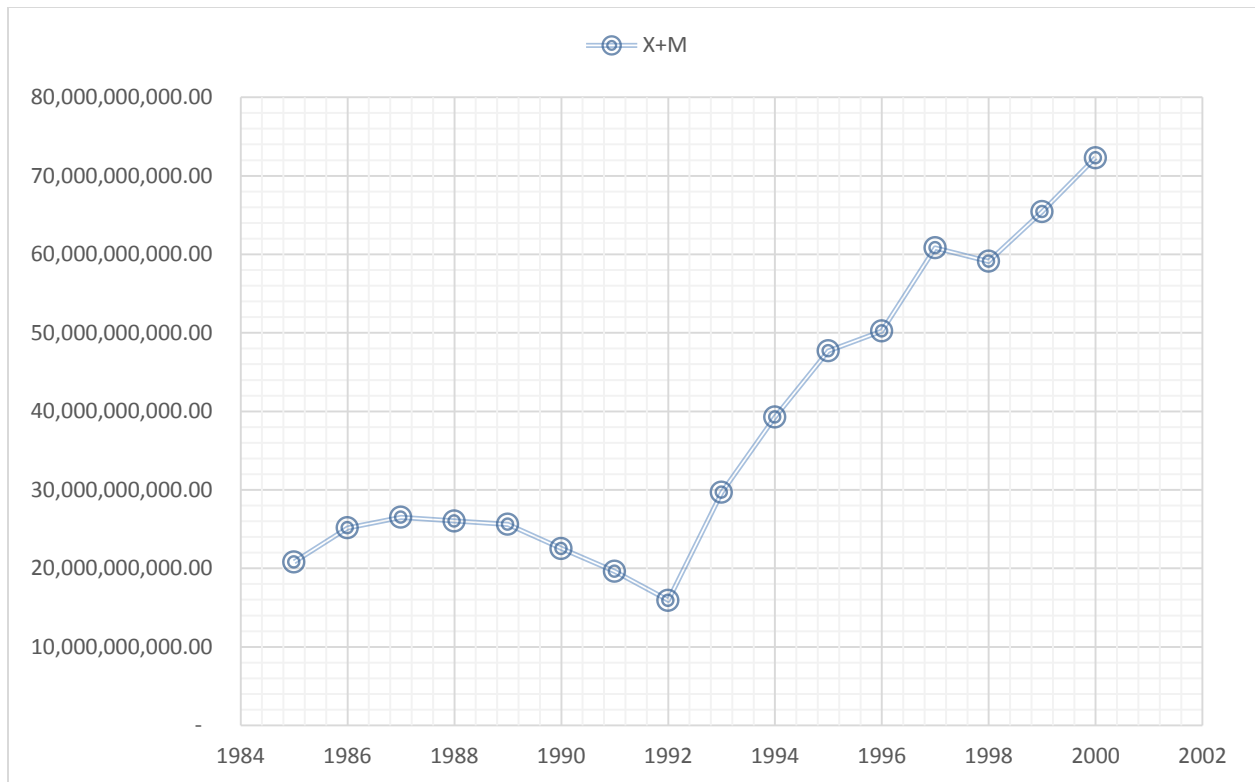
Source: Own computation based on WB data(1985-2000)

Figure 4.4: Trend and growth of import and export of Ethiopia

From here the average growth rate was 8.6% annually between 1985 and 2000.

Source: Own computation based on WB data (2000-2016)

Figure 4.5: Trend and growth of import and export of Ethiopia

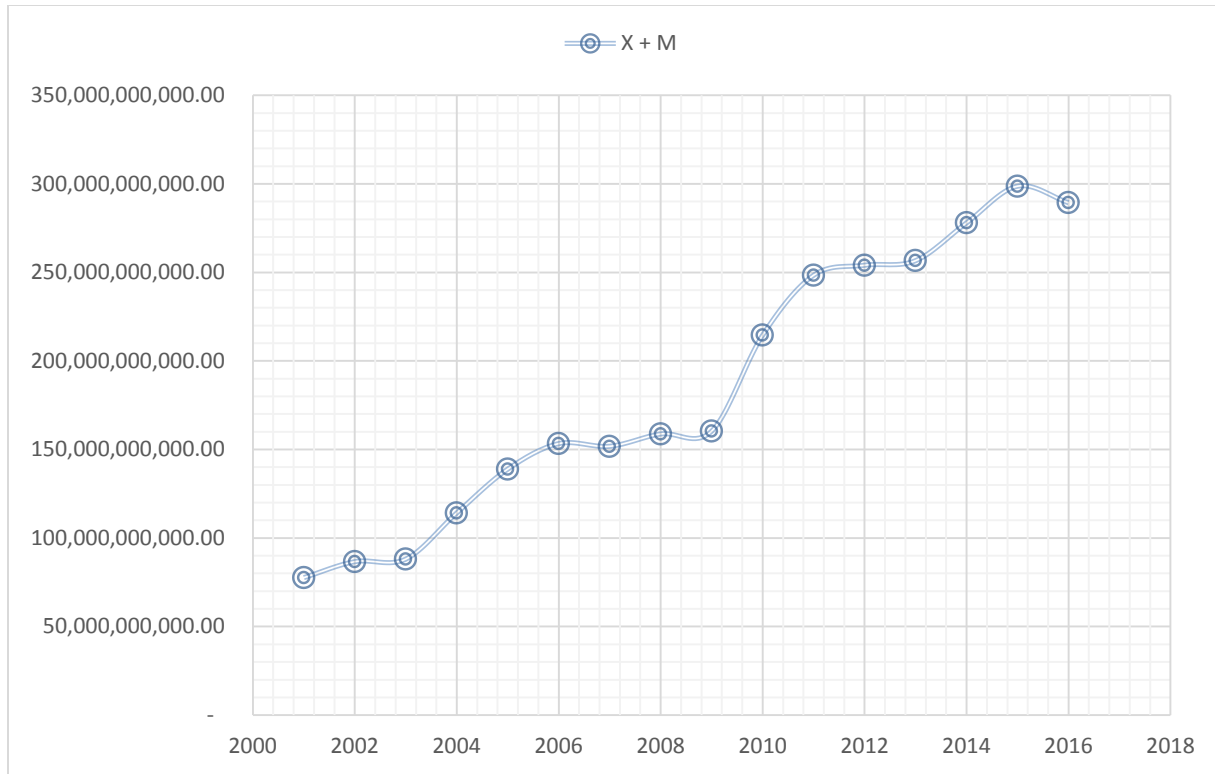The table shows that the amount of import and export of Ethiopia shows positive growth through time. In other words we can grasp the growth function of X + M. From the function we can understand that the average rate of growth of import and export jointly was 9.3% annually. Therefore, in the recent time group both import and export was slightly encouraged when we compare to the earlier time group.

4.1.4. Trend of inflation Ethiopia (1985 – 2016)

The source of inflation in Ethiopian is not clearly understood because of unrelated trend with economic growth such as GDP. However; it was high from the starting of the period and goes sharply to the negative amount 1986 and again goes up suddenly in 1987 then stays around until 1990. In 1991 the inflation rate touches its higher point of the decade this might be because of

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bad speculation about that period of transition of the government. This trend continues until 2007 relatively stable situation. In 2008 the rate reaches its maximum that is 44.4% based on this study. In 2008 international financial crisis was exhibited in this year many international commodities price including petroleum were boosts to its skyline.
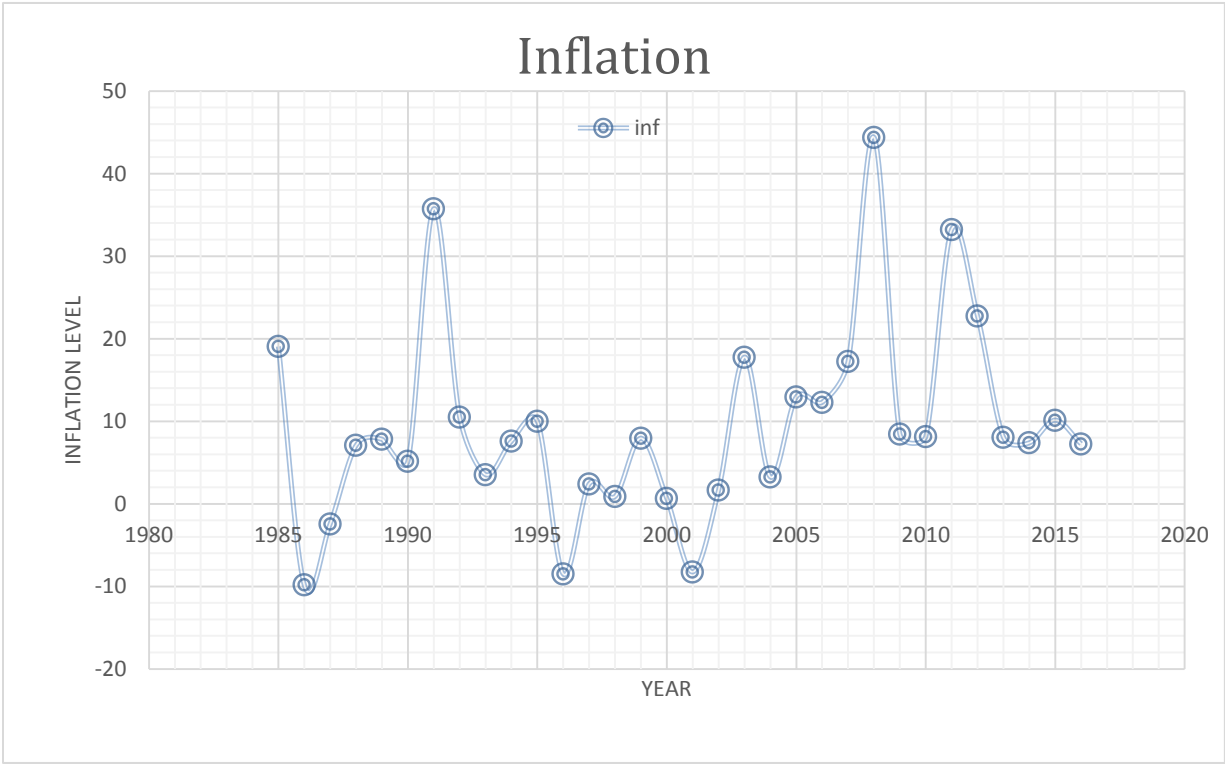
Source: Own computation based on WB data(1985-2016)

Figure 4.6: Trend of inflation Ethiopia

4.1.5. Trend and growth of agriculture and industry sectors % GDP Ethiopia (1985 – 2016)

Figure 6 shows how both agriculture sector and industry sector of the economy shared in percentage from total GDP of the country. In 1985 the share of the agriculture sector and the industry sector 55.37% and 9.66% respectively from the total GDP. Until 1995 it shows a very

big difference between the shares of both sectors. After structural policy change in 1995 the share of agriculture share was gradually eroded. In any cases the share of agriculture sector from GDP grows negatively in contrary the share of the industry sector increases through time and reaches 37.23% and 21.30% respectively.
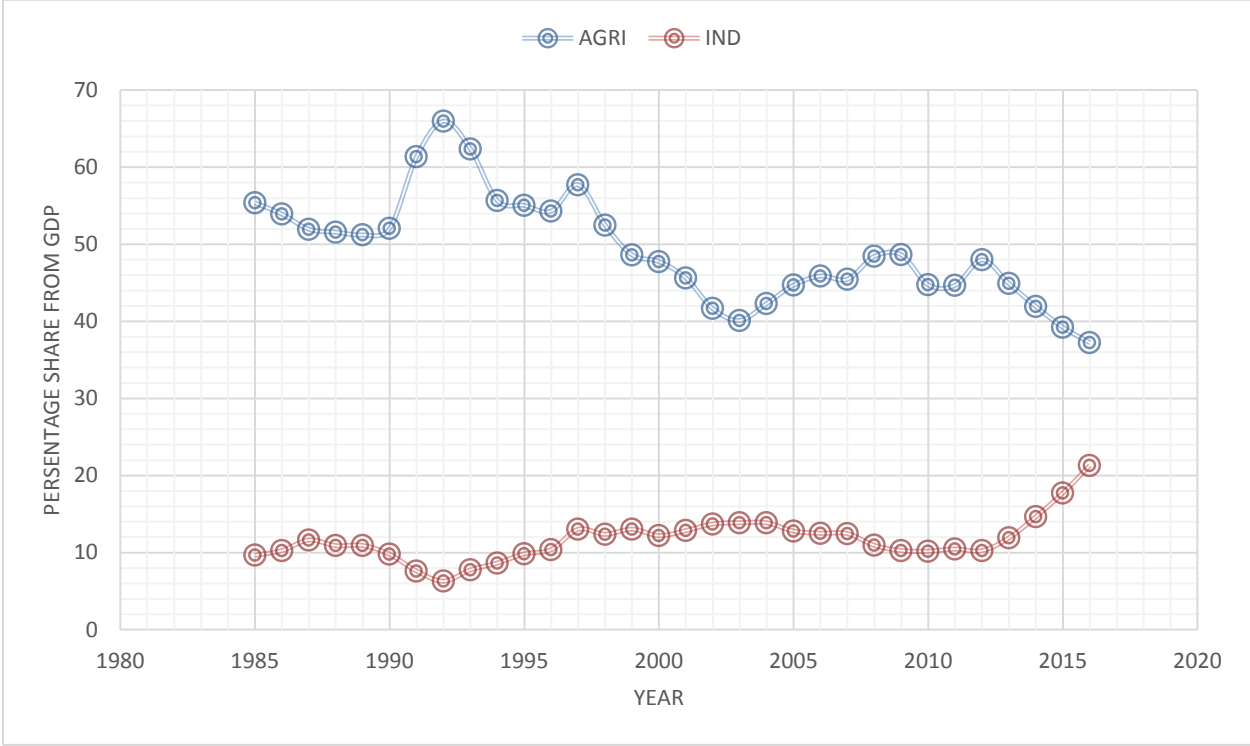
Source: Own computation based on WB data(1985-2016)

Figure 4.7: Trend of agriculture and industry share from total GDP Ethiopia

The Figure 4.7 implies that the share of the agriculture sector from the total GDP is declining time to time. On the other hand equation (2) shows the growth function of the share of the industry sector from the total GDP and the average growth rate was 1.4%. This positive growth rate suggests that the contribution of the industry sector to the total GDP is rising from time to time. This offset between the two sectors shows the structural adjustment policies and the growth and transformation plans are adequately payoff in favor of the industry sector.

4.1.6. Summary of the descriptive statistics

The results of the descriptive statistics shown on the above parts are in lines with the literatures found and discussed on its portion.

Table 4.3: Summary of descriptive analysis

variable	1985-2000	2001-2016	1985-2016
Tax revenue (%)	10	22	15
GDP (%)	8.8	23.2	13.8
Trade openness (%)	NC	NC	9.3
Share of agriculture % GDP (%)	NC	NC	-1
Share of industry % GDP (%)	NC	NC	1.4

Source: Own computation

NB: NC = Not computed; inflation rate is not included

From the table it is clearly detect that all independent variables except share of agriculture % GDP are positive relation with the dependent variable. For instance when we see the growth trend and level of GDP and tax revenue in the first time group they grew with 8.8% and 10% respectively and in the second time group they grew with 23.2% and 22% respectively. This trend and path of tax revenue and GDP shows there is a significant relation between them. To conclude the trend and growth of the independent variables are as expected and also in line with the literatures.

4.2 Econometrics Model Results

4.2.1. Unit root (stationary) test

Test for stationary is a prerequisite for consistent and valid inference of time series models and co-integration analysis. Unit root implies that the time series data are non-stationary while absence of a unit root shows that the time series data are stationary. The results of using non-stationary time series may be spurious. It may imply as if a relationship is existed among variables, when no relationship is actually existed. At level almost all variables are non-

stationary so we have to take the first differences. In this case all variables are stationary at 5 percent critical value by using Augmented Dickey Fuller (ADF) as we can see on the below table.

Null hypothesis H_0 =data has unit root (non-stationary)

Alternate hypothesis H_1 =the data doesn't have unit root (stationary)

Guideline (Criteria): if /test statistic/ is greater than /5% critical value/, reject the null hypothesis and data is stationary and not otherwise.

Table 4.4: unit root test at first difference

Variable	Test statistics	5% Critical Value	Remark
Tax rev	-2.118	-1.950	Suppressed constant
	-3.649	-3.600	Trend
	-3.685	-1.714	Drift (constant)
GDP	-2.649	-1.950	Suppressed constant
	-4.259	-3.600	Trend
	-4.094	-1.714	Drift (constant)
INF	-9.153	-1.950	Suppressed constant
	-8.881	-3.600	Trend
	-8.966	-1.714	Drift (constant)
AGR	-4.077	-1.950	Suppressed constant
	-4.187	-3.600	Trend
	-4.365	-1.714	Drift (constant)
IND	-3.264	-1.950	Suppressed constant
	-3.489	-3.600	Trend
	-3.582	-1.714	Drift (constant)
OPP	-3.359	-1.950	Suppressed constant
	-4.524	-3.600	Trend
	-3.488	-1.714	Drift (constant)

Source: Own computation of the Stata output for unit root test at first difference.

Therefore, if the first difference of each variable is stationary as we can see on the above table, we can now use the Johansen co-integration approach to see long run co-integration between variables.

4.2.2. Diagnostic Tests of the Model

Before any estimation is undertaken, model diagnostic tests should be tested. To check the verifiability of the estimated long run model some diagnostic tests are undertaken.

A. Heteroscedasticity

The problem of Heteroscedasticity means that the error term in the regression equation does not have a constant variance. The existence of this problem is checked by Breusch-Pagan / Cook-Weisberg test;

Table 4.5:Breusch-Pagan test for Heteroscedasticity

Test Statics	Result		T- Statistics
Heteroscedasticity	chi2(1)	= 0.61	Prob> chi2 = 0.4338

Source: Model output

From the above table the Ho = non-constant variance and H1 = constant variance; the t-statistics is greater than 5% critical value hence reject the null hypothesis and accept the alternative hypothesis. That means that there is no a problem of heteroscedasticity.

B. Autocorrelation

Table 4.6:Breusch-Godfrey LM test for autocorrelation

Lag	chi2	df	Prob> chi2
1	50.9252	36	0.05071
2	48.3421	36	0.08198

Source: Model output

Autocorrelation is more a problem of time series data than cross-sectional data.

Ho = noautocorrelation at lag order and H1 = there is autocorrelation at lag order; from the above table the t-statistics is greater than 5% critical value hence accept the null hypothesis. It means that there is noserial correlation or there is no autocorrelation problem.

C. Normality

Table 4.7:Jarque-Bera test for normality

Equation	chi2	df	Prob> chi2
D_ltaxrev	0.947	2	0.62277
D_lgdp	0.393	2	0.82161
D_lagri	9.077	2	0.01069
D_lind	5.369	2	0.06826
D_lopp	0.764	2	0.68244
D_linf	0.230	2	0.89126
ALL	16.781	12	0.15804

Source: Model output

From the above table the Ho = residuals are normally distributed and H1 = residuals are not normally distributed; then all t-statistics is greater than 5% critical value hence we cannot reject the null hypothesis. That means residuals are normally distributed. Therefore, all the above test of the model shows no problem and it shows green light to go forward to estimation.

4.2.3. Lag-order selection

The need for optimal lag is aroused because of the sensitivity of Johansen co-integration analysis to the number of lags included in the model. It appears that, in general, too few lags in the model results in rejection of the null hypotheses too easily, while too many lags in the model decrease the power of the test (Verbeek, 2004). Therefore, selection of optimal lag length helps to avoid loss of initial values. As shown in the table 2 the selected optimal lag length is two. This is because all lag selection criteria's i.e., LR, FPE, AIC, HQIC and SBIC suggest an optimal lag of two at 5% level of significance.

Table 4.8: lag-order selectionStata 12.1

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-22.9691				4.1e-07	2.31752	2.39866	2.61005
1	132.413	310.76	36	0.000	3.2e-11	-7.23305	-6.6651	-5.18534
2	191.64	118.45*	36	0.000	8.9e-12*	-9.09123*	-8.03647*	-5.28834*

Source: Model output

4.2.4. Johansen test of co-integration

This method tries to investigate whether there is co-integration between variable or not. Or in other words the test tells us how many co-integrating equations are there.

Table 4.9: Johansen test of co-integration

maximum rank	parms	LL	Eigen value	trace statistic	5% critical value
0	150	1964.2988	-	1605.7750	94.15
1	161	2401.9595	1.00000	730.4535	68.52
2	170	2767.1863	1.00000	0.0000*	47.21
3	177	2767.1863	0.00000	0.0000	29.68
4	182	2767.1863	-0.00000	0.0000	15.41
5	185	2767.1863	-0.00000	0.0000	3.76

Source: Model result

To check whether there is co-integrating equation or not,starting with 0 maximum rank i.e.; 0 means no co-integrationthen we have to put H_0 = there is no co-integration among variables and H_1 = there is co-integration among variables. To check this hypothesis we have the guide line to compare trace statistics and critical value. The guide line is if trace statistics is greater than 5% critical value then reject the null hypothesis and accept the alternative hypothesis. At 0 maximum rank: 1605.7750> 94.15 therefore we have to reject the null hypothesis and accept the alternative hypothesis. Now we know that there is at least one co-integrating equation or there is co-integration among variables. The next step will be to answer how many co-integrating equations do we have? We have to pass through the same step as earlier we did. H_0 = there is one co-integration equation among variables and H_1 = there are more than one co-integration equations among variables. The guide line is if trace statistics is greater than 5% critical value then reject the null hypothesis and accept the alternative hypothesis. At 1 maximum rank: 730.4535>68.52 then reject the null hypothesis and accept the alternative hypothesis i.e.; there are more than one co-integrating equations. Now we know that there is more than one co-integrating equation. Then; H_0 = there are two co-integration equations among variables and H_1 = there are more than

two co-integration equations among variables. The guide line is if trace statistics is greater than 5% critical value then reject the null hypothesis and accept the alternative hypothesis or not. At 2 maximum rank: 0.0000<47.21 then accept the null hypothesis which says there are two co-integrating equations or we can say the model have two error terms. From Johansen test of co-integration we understand that there is long-run association among variables or variables are moving together in the long-run.

4.2.5. Vector Error Correction Model (VECR)
Long-run Causality

Long-run causality in VECM shows whether there exist a long-run influence goes from the independent variables (i.e. GDP, Agriculture sector share % GDP, Industry sector share % GDP, Trade openness and Inflation) to dependent variable (Tax Revenue) or not. When the sign of the error correction term is negative and the t-statistics is significant it implies that there is a long-run causality running from the independent variables to the dependent variable.

In this model the error correction term is -0.3716946 and the p value is 0.001; therefore we can say that there is long-run causality running from the independent variables (i.e. GDP, Agriculture sector share % GDP, Industry sector share % GDP, Trade openness and Inflation) to dependent variable (Tax Revenue). In other words the independent variables influence the dependent variable in the long-run.

Short-run Causality

The short-run causality also shows whether each independent variable with different time lag can jointly cause the dependent variable or not.

To test the short-run causality set a hypothesis H_0 = the coefficient is zero (there is no causal relation between the selected independent variable and the dependent variable) and H_1 = the coefficient is not zero (there is causal relation between the selected independent variable and the dependent variable). Let's start one independent variable GDP.

Table 4.10: short-run causality test

Chi2 (2)	7.20
Prob> Chi2	0.0273

Source: model output

The t-statistics is less than 5% critical value then reject the null hypothesis and accept the alternative hypothesis. That means that there is short run causality goes running from GDP to tax revenue.

With this procedure all independent variables are checked for short-run causality and found similar to the result of GDP.

Therefore, we conclude that there is a long-run and a short-run causality running from all independent variables to the dependent variable.Once we select the lag and the maximum rank and also checked for long-run and short-run causality we can now estimate VECM. Then we find the output from the model.

Table 4.11:Vector error correction model

Variable	Coefficient	Std. Error	T - statistics	Prob.
C	0.0896381	0.0363455	2.47	0.014
GDP	0.6061047	0.2743501	2.21	0.027
AGR	-0.5679449	0.4447495	-1.28	0.202
IND	0.4913398	0.1758287	2.79	0.005
INF	-0.0498153	0.0234637	-2.12	0.034
OPP	0.1541238	0.0497292	3.10	0.002

Source: Model Result

From the above table the model converges to the long-run equilibrium with 0.18%. Which means the coefficient of lagged error correction term ECM (-1) captures the speed of adjustment of the dependent variable towards its long run steady state.

The model derived from the co-integrating vector normalized with respect to LTR can be represented as:

LTR= 0.09 + 0.60 LGDP - 0.56 LAGRI + 0.49 LIND - 0.04 LINF + 0.15 LOPP

(0.036)   (0.274)   (0.444)   (0.175)   (0.023)   (0.049)

Therefore, all variables except agricultural value added share of GDP are significantly affect tax revenue. As we can see on the model Gross Domestic Product, industrial value added share of GDP and trade openness has positively affect tax revenue of the country whereas, tax revenue is negatively influenced by the inflation rate. Moreover agricultural value added share of GDP has negative influence on tax revenue even though it is not significantly influential variable.

1. GDP

The model shows that tax revenue is positively and significantly influenced by gross domestic product in the long run. The result is interpreted as a 1% increase in GDP results in a raise in tax revenue percentage of GDP by 0.60%, being other variables constant.

2. Industrial value added share of GDP

Industrial value added share of GDP also has positive and significant long run effect on tax revenue. The result is as expected and has the coefficient of 0.49, which can be interpreted as a 1% increase in the share of industry to GDP will boost tax revenue by 0.49%, keep other variables constant. The result was as predicted in theory that manufacturing enterprises are producing items that are easier to tax meanwhile, business owners typically keep better and organized records of their activities.

3. Inflation Rate

Inflation measured by consumer price index (CPI) and taken as measure of macroeconomic instability is found to have long run significant effect on tax revenue. The result is also in line with the hypothesized sign. A percentage increase in inflation, results in 0.04% of reduction in tax revenue, which is significant effect that could put the government under pressure, if inflation is going high. This is attributed to the increase in cost of living associated with the loss of purchasing power of money, which could ultimately reduce real value of tax collected.

4. Trade Openness

Trade openness is the result of the amount of import plus the amount of export divided by the current amount of GDP. The result found from the model has significant and positive effect on tax revenue. A 1% increase in trade openness, results with 0.15% increase in tax revenue. This means the government should facilitate and encourage both import and export as much as possible to have a significant increase on tax revenue.

5: **CONCLUSION AND RECOMMENDATION**

5.1.Conclusion

In least developing countries like Ethiopia, where material and financial resources are limited so as to carry out various developmental goals, the need to boost domestic revenue mobilization (i.e., tax revenue) is decisive. Hence, the study investigated the determinants of tax revenue in Ethiopia. The study explored the macroeconomic determinants of tax revenue in Ethiopia from 1985 to 2016.

In this study quantitative research method has been used and time series regression analysis has been used. It applied Johansen co-integration approach and vector error correction model. The stationary behavior of variables included in the model is tested by using ADF test to avoid spurious correlation results, and the test result showed all variables were stationary at first difference. The long run and short run relationship established between tax revenue and its determinants implied various empirical findings.

The study regression results reveal that GDP, Industrial value added share of GDP and trade openness have positive and significant effect on tax revenue of Ethiopia. From this result one can speak as when GDP, Industrial value added share of GDP and trade openness accelerates positively, tax revenue will increase by the sum effect of those variables coefficients and if the growth of those variables (i.e.; GDP, Industrial value added share of GDP and trade openness) is with negative sign, tax revenue will goes down. On the other hand inflation has negative and significant impact on tax revenue that means when inflation rate is get raising; the amount of tax collected will reduce by inflation coefficient and vice versa. Agricultural value added share of GDP has negative but insignificant impact on tax revenue of Ethiopia. This result implies that the more the share of agriculture sector from GDP the lower the tax revenue collected. To make the above sentence clear when the share of agriculture sector from GDP is higher than industry sector, the tax collected from the economy will be lower because agricultural products are not suitable for taxation than industrial products. Therefore even if it has insignificant impact on tax

revenue the government of Ethiopia should give emphasis to reduce the share of agriculture sector in GDP and increase the share of industry sector in GDP.

5.2.Recommendation

Tax revenue is the best method to finance government expenditures. Therefore the government of Ethiopia should give the ultimate emphasis to collect the optimum tax which is generated from the economy. Based on the findings of this study the following policy implications were forwarded as an alternative to improve the performance of the private sector and of course to increase its level, having in mind the contributions it makes to the development of the economy in general and the tax collection in particular.

- Although, tax revenue has remained to be the largest contributor of the total government revenue in Ethiopia. As evidenced from the result of this study, still the share of tax revenue to GDP is very low, which would imply that domestic resource mobilization is at lower level. Therefore, improving the efficiency of tax administration, broadening tax bases like, boost in industrial sector % of GDP compared to agricultural sector shall be given due attention by policy makers. Strategies that will increase economic growth should be facilitated. GDP has been found to affect tax revenue significantly in the short run and in long run as well. Therefore, the government should work on progressing the nation's GDP so as to increase the tax revenue and bypass tax revenue collected will improve the GDP of the country because the government employs that collected money by tax on basic capital expenditures. This expenditure will contribute for the incremental path of GDP. This requires policy makers to put good policies in place, which will ensure that tax collection increases as the economy grows.

- Due to the significant effect of industrial value added share of GDP on tax revenue in the long run, the policy makers has to do with a paradigm shift from the agriculture sector to the development of the industrial sector, while maintaining the inter relationship between the two sectors. Hence, the government should also give attention for the agriculture sector (i.e.; commercial form of agriculture) which can supply food and other agricultural

products. The reason behind the above sentence is that the danger of migration of working class from the rural part to the industrial sites of Ethiopia. In this case although, the agricultural sector is on subsistence level it cannot supply food and industrial input as well. Likewise, the government has to take care of enacting policies that can promote industrial production and it has to strive forward to bring small industries into medium and large industries. The current economic growth performance is also has to be extended.

- Macroeconomic instability like inflation reduces the purchasing power of the people and decrease the value of revenue collected in real terms. Hence, individuals may not motivate to pay tax; i.e., they attempted to evade from the tax authority and underreport their actual earning which will understate the amount that would otherwise be collected. Therefore the government of Ethiopia shall regulate the macroeconomic situation especially inflationary situation of the country.

- Moreover base on this study trade openness has positive and significant impact on tax revenue. Therefore the government of Ethiopia should encourage import and export to increase trade openness ratio. To encourage foreign trade the government should reduce barriers like tariff and quota and also should facilitate loan and foreign exchange for importers and exporters.

REFERENCES

Abhijit S. Gupta (2007). Determinants of Tax Revenue Efforts in Developing Countries, IMFworking paper (WP/07/184).

Aggrey.J. (2011). Determinants of tax revenue evidence from Ghana.

Anware M. (2014) determinants of tax revenue performances in Ethiopia, Mini research paper November 2014.

Ariyo, A. (1997). Productivity of the Nigerian tax system: 1970-1990, Research Paper No. 67.

Bahl, R. W. (1971) a regression approaches to tax effort and tax ratio analysis.

Belay Zewude (2015). Determinants of Tax Revenue Performance: Ethiopian Federal Government, Addis Ababa University.

Benoit, K., 2011. Linear regression models with logarithmic transformations. London: London School of Economics.

Bhatia, H. (2009). Public Finance (14th Edn). New Delhi: Vikas Publishing House PVT Ltd.

Bird, Richard M. and Pierre-Pascal Gendron (2007). The VAT in Developing and Transitional Countries: Cambridge University Press.

Chelliah, R. J., Hessel J. B., & Kelly, R., M. (1975). Tax ratios and tax effort in developing countries. Staff Papers, International Monetary Fund, 2, 187-205.

Collier, P. and A. Hoeffler, 2005. "Resource Rents, Governance and Conflict" Journal of Conflict Resolution, 49(4):

Delessa J. (2014), Tax Reforms and Tax Revenues Performance in Ethiopia, Journal of Economics and Sustainable Development Vol.5, No.13, 2014.

Geda, A. (2005). 'Macroeconomic Performance in Post-Reform Derg Ethiopia'.Journal of Northeast African Studies, 8 (1).

Gupta, A. S., Clements, B., Pivovarsky A., &Tiongson, E. R. (2004). Foreign aid and revenue response: Does the composition of aid matter? In S. Gupta, B. Clements & T. Gabriela (Eds.), helping countries develop: The role of fiscal policy. Innchauste. Washington: International Monetary Fund.

Gupta, A. S. (2007). Determinants of tax revenue efforts in developing countries.IMF Working Paper 07/184.

Harberger, A. C. (1962). The incidence of corporation income tax. Journal of Political Economy, 70(3), 215-240.

Harberger, A. C. (1966) Efficiency effects of taxes on income from capital. In M. Krzyzaniak (Ed.) Effects of Corporation Income Tax. Detriot: Wayne State University Press International Refereed Research Journal (2012) page (41).

James, Nobes (1998); the economics of taxation, Prentice.Hall Europe - chapter 2. 14

Jhingan, M. (2004).Money, Banking, International Trade and Public Finance. New Delhi: Vrinda Publications.

Jones, Larry E., Manuelli Rodolfo E., Rossi Peter E. (1993). Optimal Taxation in models of endogenous growth. Journal of Political Economy 101 (3), 485-517.

KadirKaragöz (2013). Determinants of Tax Revenue: Does Sectorial Composition Matter?,Celal Bayar University, Turkey. Journal of Finance, Accounting and Management, 4(2), 50-63.

Keen, Michael and Alejandro Simone, (2004). Tax Policy in Developing Countries: Some Lessons from the 1990s and Some Challenges Ahead.

Leuthold, J., &N'Guessan, T. (1986).Tax buoyancy and elasticity in developing economy. Bureau of Economic and Business Research, Faculty Working Paper No. 1272, Urban Champain: University of Illinois.

Lortz, J. R., &Morss, E. R. (1967).Measuring tax effort in developing countries. IMF Staff Papers, 14, 478-495.

Lucas, (1990).The American Economic Review, Vol. 80, No. 2, Papers and Proceedings of the Hundred and Second Annual Meeting of the American Economic Association.

Mahdavi, S., 2008. The Level and Composition of Tax Revenue in Developing Countries: Evidence from unbalanced panel data. International review of Economics and Finance, 17: 607-617.

Marchant and Snell (1997). Balance of Payments;economic transactions between a nation and its trading partners.

Mendoza, E.G., Razin, A. and Tesar, L.L. (1994). Effective Tax Rates in Macroeconomics: Cross Country Estimates of Tax Rates on Factor Incomes and Consumption. Journal of Monetary Economics, 34, 297-323.

Musgrave, R. A. and Musgrave, P.B. (1984), Public Finance in Theory and Practice, McGraw-Hill, New York.

Musgrave, R. A. (1969). Fiscal systems. New Heaven: Yale University Press.

Musgrave, A. R. (1986). Samuelson on Public Goods 1983.In A. R.

Solow, R.M. (1956). A Contribution to the theory of economic growth. The Quarterly Journal of Economics, 70(1), 65-94.

Stotsky, J. G., &WoldeMariam, A. (1997).Tax Effort in Sub-Saharan Africa. Ohio: Ohio University Press.

Tait, A. Gratz, W. L. M., &Eichen green, B. J. (1979). International comparisons of taxation for selected developing countries, 1972-76. IMF Staff Papers, No. 26, 123-156.

Tanzi, V., &Blejer, M.I. (1988).Public debt and fiscal policy in developing countries.In A. Boston (Chapter8), the Economics of Public Debt. Edward: Elgar Publishing Ltd.

Tanzi, V., & Zee Howell, H. (2000). Tax policy for emerging markets: Developing countries. National tax journal, 53(2), 299-322.

Tanzi, Vito, 1992, "Structural Factors and Tax Revenue in Developing Countries: A Decade of evidence," in Open Economies: Structural Adjustment and Agriculture, ed. by Ian Goldin and L. Alan Winters (Cambridge: Cambridge University Press), pp. 267–281.

Teera, J.M (2002). Tax performance: A comparative study. Department of Economics, University of Bath, Working Paper No. 01/2002.

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

Toye, J.F. (1978). (Ed.) Taxation and Economic Development, London, England: Frank Cass &Co.Ltd.

Turnovsky(1996).Empirical evidence on the formation of price expectations; Journal of Public economics.60 (1), 21-44, 310, 1996.

Worku, G., 2010. Causal links among saving, investment and growth and determinants of saving in Sub-Saharan Africa: Evidence from Ethiopia. Ethiopian Journal of Economics, 19(2): 1—34.