ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

FACTOR AFFECTING TAX REVENUE IN ETHIOPA

WIDNESH SAHLE

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FACTORES AFFECTING TAX REVENUE IN ETHIOPIA

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BY

WIDNESH SAHLE SAFO.

ADVISOR

KURABACHEWE MENBER (phD)

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DECLARATION

Hereby declare that this thesis entitled “Factors Affecting Tax Revenue in Ethiopia, submitted to the St. Mary’s University at Addis Ababa, Ethiopia in partial fulfillment of the requirements for the degree of Masters of Art in Development Economics is my original work and it has never been presented in any university. All sources and materials used for this thesis have been duly acknowledged.

Declared by:

Name _____

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Date_____

ENDORSEMENT

This thesis has been submitted toSt.Mary's university school of graduate studies for examination my approval as a university advisor.

---------- ----------

Kurabachew Menber (phD) Signature

Advisor

St. Mary's University, Addis Ababa, Ethiopia.

ST.MARY UNIVERSITY
SCHOOL OF GRADUATE STUDIES
INSTITUTE OF AGRICULTURE AND DEVELOPMENT STUDIES

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APPROVED BY BOARD OF EXAMINERS

_____	_____	_____
Dean, Graduate studies	**Signature**	**Date**
_____	_____	_____
Advisor	**Signature**	**Date**
_____	_____	_____
External Examiner	**Signature**	**Date**
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Internal Examiner	**Signature**	**Date**

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ACRONYMS

ADF	Augmented Dickey Fuller
CLRM	Classical Linear Regression Model
CSA	Central Statistics Agency
DAT	Durbin's Alternative Test
ECM	Error correction Model
ERCA	Ethiopian Revenue and Custom Authority
FDI	Foreign Direct Investment
GDP	Growth Domestic Product
GNP	Growth National Product
GTPII	The second Growth and Transformation Plans
Mock	Ministry of Finance and Economic Cooperation
NBE	National Bank of Ethiopia
TOT	Turn over Tax
TR	Tax Revenue
UN	United Nations
VAT	Value added tax
VAR	vector Auto regressive
WB	World B
VECM	Vector Error correction model

ABSTRACT

The purpose of this study is to analyze the factors that affect revenues from taxes by the revenue government. The main objective of this study is to explore the factors affecting tax revenue in Ethiopia by using a secondary data and vector Autoregressivemodel. Tax revenue may be affected by various factors such as inflation, unemployment, tax rates, level of actual income exchange rate and foreign direct investment. The research approaches adopted in this thesis include collections of series data set that consists of twenty five years. The time period covered was 1994/95 to 2017/18. The findings from this research provide evidence that, result of inflation rate shows negative significant, disposal income in billions of birr positive and significant, unemployment rate have negative insignificant impact on tax revenue and interest rate have positive significant export also negative significant, and government expenditure negative insignificant effect on tax revenue. The main conclusions drawn from this study are disposal income, interest rate inflation rate, and export have significant impact on tax collection, Unemployment rate and government expenditure are insignificant variables affecting tax revenue. The study also provides recommendations that the policy makers come with policies to control the inflation rate in Ethiopia as it negatively affects tax revenue, and the government should be attracting FDI to Ethiopia and it should be directed to more manufacture sectors of the economy and to reduce unemployment. Lobby for higher employee salaries since this will further contribute to higher tax revenue and Policies makers should undertake reduce unemployment by improved geographical mobility, stricter benefit requirements, Improve labor, encourage labor intensive industries and Employment subsidies.

***Key word**; tax revenue, VAR model, Economic growth, Ethiopia.*

CHAPTER ONE

INTRODUCTION

1.1.Background of the Study

Tax is that part of the revenues of a state which is obtained by compulsory dues and charges upon its subjects. ‘’Tax is a compulsory contribution payable by an economic unit to a government without expectation of direct and equivalent return from the government for the contribution made .Bhatia.(2003.)

Tax is part of the property of each citizen which he surrenders in order to insure the remainder.

In other words, a tax is a compulsory payment or contribution by the people to the Government for which there is no direct return to the taxpayers. Tax imposes a personal obligation on the people to pay the tax if they are liable to pay it. .Ramaswami P. (2005).

Generally speaking, the structure of taxation may be *centralized or decentralized*. In centralized tax structure the tax system is uniform throughout the country whereas in a decentralized tax structure tax is not uniform throughout the country. In Ethiopia regional governments and the federal government have to harmonize their tax system so as to avoid tax competition among regions which is not for the nation as a whole.

Taxation is the powerful instrument in the hands of the government for the responsibility of protecting the interests of the community as a whole and promotes the implementation of welfare programs. Government spends huge amounts for providing benefits such as old age pensions, accident benefits free education and medical services. This expenditure on human resources comes under social expenditure. Governments are moving towards the objective of achieving maximum social welfare. Expenditure on education, public health, welfare schemes for workers, relief and rehabilitation of displaced persons and such other services may not yield direct benefit in the short run. But in the long run they contribute to improvement in the quality at human resources.

The government requires funds for the performance of its various functions. These funds are raised through tax and non-tax sources of revenue. Imposing tax on income, property, etc. raises

Tax revenues. In fact, tax is the major source of revenue to the Government Kabana, (2016). No One likes taxes, but they are unavoidable in any civilized society. Whether taxpayers believe in big government or small government, governments must have some resources in order to perform their essential services.

The average 2010/11 to 2015/16 Ethiopian Tax Revenue Ratio to GDP is about 12.08. Although tax revenue to GDP showed a slight improvement in 2013/14 that is 12.7 compared to 12.4 in 2012/2013, it still remains low compared to the tax revenue generating capacity of the economy and the financing requirements of the development programs as GTP one target of tax to GDP was 15-17%. Similarly, it is well below the average performances of sub Saharan African countries of about 20% (Kenya 23% Mauritius 19% and Tanzania 17%), (NBE,2015/16).

For most developing countries, taxation goes hand-in-hand with economic growth and taxes are lifeblood for governments to deliver essential services and to make long-term investments in public goods Organization for Economic Co-Operation and Development (OECD, 2008).

According to the constitution of Ethiopia, regional states have a power to impose income tax on employees of the state government, agricultural tax from farmers, tax on individual traders, houses and other property owned by private persons or regional government, sales tax from public enterprises owned by the state government, and from forest products. This regional system of taxation creates important inequalities of resources between regions. Vertical imbalances are generated by the limited tax bases in the country. Moreover, there is inequality between federal and regional state, and between the regional states themselves.

Direct and indirect types of taxes practices in Ethiopia. Direct tax revenue in Ethiopia consists of tax on Income from Employment, Business Profit Tax, Rental Income Tax, Tax on Interest Income on Deposits, Dividend Income Tax, Tax on Income from Royalties, Tax on Income from Games of Chance, Tax on Gains of Transfer of Certain Investment Property, Rendering of Technical Services outside Ethiopia and Agricultural Income Tax. (Tilahun, 2014).

Indirect tax revenue in Ethiopia consists of Turn Over Tax, Excise Tax, Value Added Tax and Customs Duties (Tilahun, 2014).

1.2.Statement of the problem

Economic development is one macroeconomic goal of each country in the world. Especially, in most developing economies the issue of economic development is still to be answered. Most developing countries depend on foreign assistance to finance their development program. Therefore, better mobilization of internal resources could help to reduce the fiscal deficit, and to better control the process of economic development and reduce poverty. Ethiopia, like any other developing countries, faces difficulty in raising revenue to the level required for the promotion of economic growth. Government intervention in providing social goods and service as well as infrastructure is substantial, raising more revenue is critical. Similarly in these countries there is uneven distribution of income and a high percentage of the population affected by severe poverty is a serious problem, thus redistributing income and wealth in these countries is very important in curbing the problem (Fantahu, 2013).

Fiscal policy continued to focus on increasing tax revenue by strengthening tax administration and enforcement, while covering a greater proportion of government expenditures from domestic resources. These government expenditures have largely been geared towards enhancing capital expenditure and pro-poor social spending programs and promoting safety nets. Thus, domestic revenue recorded a 5.1 percent annual growth while general government expenditure showed a 7.6 percent increment resulting in a budget deficit equivalent to 3 percent of GDP, higher than 2.8 percent of GDP target set in the GTP II plan. (NBE, 2017/18).

The tax system in developing countries imposes high expenses on the society. Low efficiency, high collection charges, waste of time for taxpayers and the staff, and the low amounts of received taxes and the deviation of optimum allocation of resources are some of the features of such systems (Forbid, 2000).

Taxation in developing countries is a challenging topic and has attracted increasing attention in the last two decades. During this period, many problems observed like poor administration, failing to collect sufficient tax revenues, lack of government and economic stability (Vadde & Gundarapu, 2012). As stated by Vadde and Gundarapu, any developing countries, like Ethiopia, has faced difficulty in raising revenue to the level required for the promotion of economic

growth. Hence, the country has been experienced a consistent surplus of expenditure over revenue for sufficiently long period of time.

Along with the growth in the overall Ethiopian economy, it has been observed that there has been an increased government spending and deficit financing. In principle, government could use both domestic and external sources of finance that a country can tap to finance the deficit. Generally, Government of Ethiopia has to render enormous range of social activities, which incur heavy expenditure. A part of the expense is sought to be raised through taxation or financed by through taxation. (IMF, 2006).

Currently the government of Ethiopia is not collecting enough taxes (African Economic Outlook, 2015). The issue is to identify the root problem. Therefore, it is very important to study the major determinants and factors that affect tax revenue of the country in order to increase government revenue and assure economic stability. This study will to identify the variables which affect tax revenue in order to increase government revenue and economic stability. Disposal income, interest rate, inflation, government expenditure, export GDP, investment and unemployment are the independent variables and tax revenue is the dependent variable.

1.3.Objectives of the study

Objectives of the study have general characteristics

1.3.1. General Objective of the Study

The overall objective of the study is to examine factors affecting tax revenue in Ethiopia.

1.4.Research question

The study will address the following research questions. Regarding to the factor affecting tax revenue in Ethiopia.

- What are the main sources of revenue available in Ethiopia?
- What are the alternative recommendations can be made to improve the performance of tax revenue?

1.5. Significance of the study

The study helps policy makers to be able to understand the determinants of tax revenue in Ethiopia. And the findings and recommendations of the study help to the concerned body to take necessary corrective measures and use them as future policy input**.**

1.6. Scope of the study

The study focus on examining the determinants of tax revenue in Ethiopia by considering six independent variables against the tax collection for the past 25 years. Data for the time series ranging from 1994/95-2017/18.

These variables are. Disposal income, interest rate, inflation, government expenditure, export and unemployment rate.

1.7. Limitation of the study

The study is limit to the six independent variables to investigate factors that affect tax revenue. The independent variables are disposal income, interest rate, inflation, government expenditure export and unemployment.

The time period selected in the study covers twenty five years data from 1994/95 to 2017/18.

1.8. Organization of the Study

The study is organized in to five chapters. Chapter one contains introduction, statement of problem, objective, research question, significance, scope and limitation of the study. The second chapter covers the theoretical and empirical reviews of literatures related to tax incentives. Chapter three focuses on research design and methodology of the study. Chapter four deal with findings of the study and the last chapter present summary of the findings, conclusions, and recommendation.

CHAPTER TWO

LITRACHER REVIW

2.1.Theoretical perspectives

The theoretical part of the literature covered topics like definition and concept of tax , objective of taxation, source taxation, types of tax in Ethiopia, type of tax system. Principle of tax and effective factor of tax revenue in Ethiopia.

2.1.1. Definition and Concept

The term "taxes" is confined to compulsory, unrequited payments to general government. Taxes are unrequited in the sense that benefits provided by government to taxpayers are not normally in proportion to their payments.

The Oxford Advanced Learner's Dictionary defines „tax" as: "Money that has to be paid to the government so that it can pay for public services". People pay tax according to their income and businesses pay tax according to their profits. It is often paid on goods and services.

Taxation is principal method by which a government gains revenue into its budget. That revenue goes into a vast number of items, from paying debt, deafening the potential for implementing certain policies to paying for public services and welfare benefits and the military etc.

2.1.2. Objectives of Taxation

The objectives of the tax system and the relationship between these objectives are hardly clearly stated (Cut 1969).

i. Raising of Revenue: The classical function of a tax system is the raising of the revenue required to meet government expenditure. This income is required to meet the expenditure which is either the provision of goods and services which members of the public cannot provide such as defense law and order to the provision of goods and service.

ii. **Wealth Redistribution**: In modern times, great emphasis has come to be placed on the objective of redistribution of wealth. This has two quite distinct forms. The first is the doctrine that taxation should be based on ability to pay and is summarized by the saying that "the greatest burdens should be borne by the broadest backs." The second form presupposes that the present distribution is unjust and concludes that this should therefore be undone. This second principle sees confiscation as a legitimate objective of taxation.

iii**. Economic Price Stability**: It has been said that the most fundamental reason a government has for taxing its citizens is to provide a reasonable degree of price stability within the nation (Summerfield, 1980). Most spending by the public and private sectors without taxes generates high demand, which is inflationary. In such a situation, the basic function of taxation is to reduce private expenditure in order to allow government to spend without causing inflation. Thus, taxation is basically a deflationary measure. On the other hand, when aggregate demand is lower than the deserved level, government has two options which are to increase government spending with increasing taxes or to reduce taxes while leaving government spending stable.

iv. Economic Growth and Development:-In addition to maintaining reasonable price stability, governments are determined to promote the near-full employment of all the resources of the country (including human resources i.e. Labor) and ensure a satisfactory rate of economic growth. Economic growth and development programs are geared towards raising the standard of living of the masses of a country through the improvement of their economic and social conditions. Taxation in one way discourages, postpones or reduces consumption and encourages saving for private investments. According to Soyode and Kajola (2006) the responsibilities or objectives of government using taxation are as follows:

a) **Revenue Generation**: The primary objective of a modern tax system is generation of revenue to help the government to finance ever-increasing public sector expenditure.

b) Provision of "Merit Goods": An important objective of tax system is the promotion of social, economic and good governance through provision of merit goods. Examples of merit goods are health and education.

c**) Provision of "Public Goods**": Provision of commonly consumed goods and services for which an individual cannot be levied the cost of the goods or services consumed are one of the functions of government. Examples of public goods include: Internal security through maintenance of law and order by police and other security agencies; External security through defense against external aggression by Army, Navy and Air Forces, and Provision of street lights and roads.

d) Discouraging consumption of "Demerit Goods" Tax can be used to discourage consumption of demerit or harmful goods like alcohol and cigarette. This is done to reduce external costs to the society. These external costs include health risks and pollution.

e) Redistribution of Income and Wealth: Tax system is a means of ensuring the redistribution of income and wealth in order to reduce poverty and promote social welfare. Government also has responsibility for fighting inflation, unemployment and creating a sound infrastructure for business. A tax system is one of the means of achieving this.

f) Harmonization of Economic Objective: Harmonization of diverse trade or economic objectives of different countries is one of the modern objectives of tax systems.

2.1.3. Direct and Indirect Tax

According to Samuelsson (1980) and Ajyel (1983) based on the nominal source of taxation or by the way of collecting taxes, it can be classified as direct and indirect taxes.

2.1.3.1.Direct Taxes

A direct tax is paid by a person on whom it is levied. In direct taxes, the impact and incidence fall on the same person. If the impact and incident of a tax fall on the same person, it is called as direct tax. It is borne by the person on whom it is levied and cannot be passed on to others. For example, when a person is assessed to income tax or wealth tax, he has to pay it and he cannot shift the tax burden to anybody else. In Ethiopia, Government levies the direct taxes such as income tax, tax on agricultural income, professional tax, land revenues, taxes on stamps and registrations etc.

2.1.3.1.1 Merits of Direct Taxes

1. **Ensures the Principle of Ability to Pay**: Direct taxes are based on the principle of ability to pay. They fall more heavily on the rich than on the poor. The tax burden is distributed on different sections of the society in a just and equitable manner.

2. Reduces the Social and Economic Inequalities: Direct taxes reduce a disparity in the distribution of income and wealth. By adopting the progressive tax system, rich people pay on higher rates of adopting the progressive tax system, rich people pay on higher rates of taxation, while the poor pay on lower rates or given exemptions. This reduces the gap between the poor and rich to a considerable extent.

3. Certainty: Direct taxes satisfy the canon of certainty. In direct taxes, the time of payment, mode of payment, the amount to be paid etc. are made clear. Both the taxpayers and the Government know the amounts to be paid and the Government can estimate the revenue from these taxes.

4. Economy: The cost of collection of these taxes is low because the government adopts the different methods of collections like tax deduction at source, advance payment of tax etc. Besides, the taxpayers pay the amount of tax directly to the government. Thus, the principle of economy is achieved in the case of direct taxes.

5. Elasticity: Direct taxes are elastic in nature. For example, when the income of the people increases, the tax revenue also increases. Moreover, during the unforeseen situation like flood, war etc. the government can raise its revenue by increasing the tax rates without affecting the poor.

6. Educative Effect: Direct taxes create civic consciousness among taxpayers. Since the taxpayers feel the burden of tax directly, they are interested in seeing that the Government properly spends the money. They are conscious of their rights and responsibilities as a citizen of the State.

7. Control the Effects of Trade Cycles: Direct taxes control the effects of trade cycles. They can be used as a tool to mitigate the effects of inflationary and deflationary trends by raising or reducing the tax rates.

2.1.3.2.Indirect Taxes

Under indirect taxes, the impact and incidence fall on different persons. It is not borne by the person on whom it is levied and can be passed on to others. For example, when the excise duty is levied on the manufacturer of cement, it shifts the burden of tax to the consumers by raising the selling price. Here the impact of excise duty falls on the manufacturer and the incidence on the ultimate consumers. The person who is required to pay the tax does not bear its burden. Thus, indirect taxes can be shifted.

2.1.3.2.1. Merits of Indirect Taxes

Convenience: Indirect taxes are more convenient to the taxpayers. Since the tax is included in the selling price of the commodities, the consumer pays the tax when s/he purchases them. S/he pays the tax in small amounts (installments) and does not feel its burden. Thus, indirect taxes are quite convenient and less burdensome.

Wide Scope: While the people with income and wealth above a certain limit are brought under the levy of direct taxes, indirect taxes are paid by all both poor and rich. Under indirect taxes, everybody pays according to their ability. The tax burden is not imposed on to the small section but it is widely spread. Thus, the indirect tax has wider scope.

Elastic: The revenue from the indirect taxes can be increased. Whenever the Government wants to raise its revenue, or lower it, it can be achieved by increasing and decreasing the rates of taxes on the commodities whose demand is inelastic.

Tax Evasion is Not Possible: Indirect taxes are included in the selling price of the commodities. So, evading of such tax becomes very difficult. If the person wants to evade the tax, it can be done only by refraining the consumption of the particular commodity.

Substantial Revenue: Indirect taxes yield substantial revenue to both Central and State Governments. The developing countries like Ethiopia are heavily dependent on indirect taxes. Direct taxes have a limited scope in these countries because of low per capita income.

Progressive: Indirect taxes can be made progressive by imposing lower rates of taxes or giving exemption to the necessary articles and heavy taxes on luxurious articles. Thus, indirect taxes also confirm the principle of equity.

Effective Allocation of Resources: Indirect taxes have great influence in the allocation of resources among different sectors of the economy. Resources allocation can be made effective by imposing heavy excise duties on low priority goods and by granting relief to industries producing high priority goods. This results into mobilization of resources from one sector to another positively.

Discourages the Consumption of Articles Injurious to Health: Indirect taxes discourage the consumption of certain commodities, which are harmful to health. By imposing very high rates of taxes on commodities like liquors, drugs, cigarettes etc., which are harmful to health, their consumption can be reduced.

2.1.4. Major Types of Taxes

Tax on income:

Apart from personal income tax, corporate income tax has become a prominent form of revenue to modern Governments. The joint stock company-also known as the business corporation - has a separate legal entity and the net income or profit earned by the company is taxed by the Government. Such a tax is called corporate income tax or simply corporation tax.

Wealth/Capital Tax:

There is much confusion and ambiguity attached to wealth tax, also Called as capital tax or property taxation. As distinct from income-tax which is tax on income and is paid out of income, wealth tax can be distinguished into: that which is assessed on capital but paid out of income and that which is levied on capital and paid out of capital.

Estate Duty and Inheritance Tax:

The receipt of a gift or a bequest (gratuitous transfer during lifetime is referred to as "gift" While transfer on death is "bequest") constitutes and economic gain and thus increases the economic wellbeing of the recipient. Such receipts constitute income, in whatever way it is defined but traditionally, they have never been subject to income tax but have been brought under separate tax legislations. The estate duty or death tax or death duty is a form of personal tax on property which is levied when property passes from one person to another at the time of the death of the former. Though the revenue yield of death duty may considerably be small, it is valued very much for its so-called social effects. Death taxes assume two major forms-one is called the estate duty and the other is known as the inheritance tax. The estate tax or the extant duty is a levy upon the entire estate left by a deceased person, while the inheritance tax is a levy upon the separate shares of the estate transferred to the beneficiaries.

Commodity Tax;

Commodity taxes have been designed to distribute the cost of government activity in proportion to consumption expenditures. In effect, they are designed to do indirectly what a personal expenditure tax will do directly. Commodity taxes may be levied on the production and sale of commodities and are collected from the sellers. Generally, these taxes push up the prices of the goods taxed and consumers bear the tax in the form of higher prices of the goods they buy.

Commodity taxation may be sales taxes, excise taxes and customs duties (import and export tax}.

Sales Tax

In a sense, sales tax (also called transfer tax and turnover tax) is as old as organized States. But, as a fiscal measure, it became popular only after the end of World War I. By the end of World War II nearly 30 countries had adopted general sales tax. This was in spite of the opposition to the tax on theoretical grounds. Even in the 1920's, Seligman, a well-known authority on public finance, wrote: "The general sales tax is a discredited remnant of an outworn system; it is essentially undemocratic in nature; and it would, if enacted, exaggerate rather than attenuate the present inequalities of wealth and opportunity". The main reason why the sales tax, in spite of opposition, has become one of the important sources of public revenue is its high productivity. For governments looking for additional sources of finance to meet their ever-expanding needs, the sales tax was most welcome. The present day sales taxes may be classified into three major groups. The multiple-stage and single-stage taxes apply to all stages in production and distribution; in other words, to all transactions from initial production to final sale to the consumers. In practice, however, the multiple-stage tax may not apply to all stages; a few stages may be exempt or may be subject to rates lower than the basic figure. The single-stage taxes apply to commodities only once in production and distribution channels. Such types may be either on the sale by the manufacturer or on the sale by the wholesaler or on the sale by the retailer. Finally, the value-added tax has characteristics of both multiple and single-stage taxes, since "it involves the multiplication of the tax rate but produces the same overall distribution on commodity as a single-stage tax." The VAT belongs to the family of sales tax. A VAT may be defined as "a tax to be paid by the manufacturers or traders of goods and services on the basis of value added by them". It is not a tax on the total value of the commodity being sold but on the value added to it by the manufacturer or trader. They are not liable to pay the tax on the entire value of the commodity. But they have to pay the tax only on the net value added by them in the process of production or distribution.

Value Added Tax:

The VAT belongs to the family of sales tax. A VAT may be defined as a tax to be paid by the manufacturers or traders of goods and services on the basis of value added by them". It is not a

tax on the total value of the commodity being sold but on the value added to it by the manufacturer or trader. They are not liable to pay the tax on the entire value of the commodity. But they have to pay the tax only on the net value added by them in the process of production or distribution.

Excise Tax:

Excise duty can be defined as a tax duty on some produced goods either at some stage of production or before their sale to domestic customers. That is, these taxes are imposed upon the production of particular goods or groups of goods. These goods are intended for sale or consumption with in the country. Excise duties are levied on the production of selected commodities while most of the excise duties are levied by the central government, the state government is also empowered to levy on a few items like liquor, drugs narcotics etc. Excise duties have now become an important source of revenue of the central government. To discourage the use of scare resources on production of non-essential, luxurious goods this may be imposed. Yet the most important goal is raising revenue for financing various development schemes.

Customs Taxes:

Customs taxes, also known as tariff duties, are classified into import duties and export duties. Import duties are imposed on imported articles and are collected from the importers at the time foreign goods enter the country. Import duties may be levied to discourage the import of particular commodities which compete with locally produced goods - such import duties are called protective duties; and to raise revenue for the Government - known as revenue duties. But it should be remembered that even protective duties will bring in revenue for the Government. The protective tariff duty will generally be at a high rate so as to impose a price disadvantage upon the imported goods.

2.1.5. Taxation Systems

2.1.5.1. Proportional Tax System:

A proportional tax, also called a flat tax is a system that taxes all entities in a class typically Either citizens or corporations at the same rate (as a proportion on income), as opposed to a Graduated or progressive scheme. The term “Flat Tax” is one where the tax amount is fixed as a Function of income and is a term mainly used in the context of income taxes. Usually the flat Tax is proposed to kick in at a certain income level, or to exempt income below that level, so that The lowest-income members of society pay no income tax.

Mathematically, it can be defined as follows: "The amount of tax payable is calculated by Multiplying the tax base with the tax rate". Tax Payable = Tax Base X Tax Rate Thus, in the case of proportional tax systems "Multiplier remains constant with the changes in multiplicand (income)". Economically, it can be explained as follows:

Proportional Tax System:

Table 1 proportional tax system

Tax Base Birr	Tax Rate in %	Amount of Tax (in Birr)
1500	10	150
6500	10	650
14000	10	1400
23500	10	2350
35500	10	35500
50000	10	5000

2.1.5.2.Progressive Tax System:

A progressive tax or graduated tax is a tax that is larger as a percentage of income for those with larger incomes. It is usually applied in reference to income taxes, where people with more income pay a higher percentage of it in taxes. The term progressive refers to the way the rate Progresses from low to high.)

Thus, the progressive tax system can be defined as "a system in which rates of taxation would Increase with the increase in income i.e. higher the income, higher would be the rate of tax". The rates of taxation increases as the tax base increases. Tax Payable = Tax Base X Tax Rate In this case, "the multiplier increases as the multiplicand (income) increases".

Table 2 progressive tax system

Employment income		**Income Tax (per month) payable**
Over birr	To birr	%
601	1650	10
1651	3200	15
3201	5250	20
5251	7800	25
7801	10900	30
10900	**Above**	35

2.1.5.3.Regressive Tax System:

"The tax rate decreases as the tax base increases". The amount of tax payable is calculated by multiplying the Tax Base with Tax Rate. In regressive tax system, the amount of tax is smaller as a percentage of income for people with larger incomes. Many taxes other than the income tax tend to be regressive in practice. For example, most sales taxes (since lower income people spend a larger portion of their income), excise duty etc. are regressive in nature if they are levied on the goods of common consumption. Thus, regressive tax is a tax, which taxes a larger percentage of income from people whose income is low. It places more burdens on those with lower incomes. It is the system in which the rate of tax declines with the increase in the income or value of property.

Table 3 regressive tax system

Tax Base Birr	Tax Rate in %	Amount of Tax (in Birr)
4000	20	800
6000	15	9000
12000	12	1440
15000	10	1500

2.1.5.4. Digressive Tax System

Under this system, the rate of tax is mildly progressive up to a certain limit and thereafter it May be fixed at a flat rate. The amount of tax payable is calculated by multiplying the Tax Base with the Tax Rate .Tax Payable = Tax Base X Tax Rate

Table 4 digressive tax system

Tax Base income (Birr)	Tax rate (%)	Tax liability (Birr
Tax 4ooo	20	8 00
6000	21	12 60
12000	22	26 40
15000	23	34 50
20000	23	4600

2.1.6. Principles of Taxation (Canons of Taxation)

Principles of taxation describe the proper criteria to be used in formulating and evaluating a good tax system of a country. Tax authority should follow certain code of conduct in the form of principles of taxation when determining the type and amount of tax. Adam Smith first pointed out the principle of taxation and most other economists also believe that a good tax system should be based on the following principles of taxation (Misrak, 2008).

The following paragraphs will provide a summary of the major principles of taxation that many scholar and institutions endorsed. The summary is made based on the ideas of Organization for Economic Cooperation and Development (2016), Kabinga, 2016 and Hancock (1850).

Principle of Equality

The basic principle of this theory is that the burden of taxation should be shared by the members of society on the principles of justice and equity and that these principles necessitates that the tax burden is apportioned according to their relative ability to pay theory. Slade K. (1939).

a. The Benefit Principle

Benefit principle was accepted by the political theorists of the 17th century. Taxation in those Time was considered as a price for the services rendered by the state. The entire philosophy was Based on the contract theory of the state. According to this principle, the state provides goods and services to the members of the society and they contribute to the cost of these supplies in proportion to the benefits received. It is an exchange relationship. According to this principle, the burden of' taxation should be divided among the people in proportion to the benefits received from the state. The persons receiving equal benefits from the state should pay equal amount as taxes and those who receive greater benefits should pay more as taxes than those getting less benefits.

b. Ability to Pay Principle

Ability to pay is interpreted as the money income of the taxpayer. It is the most generally accepted theory. According to this theory, each person should contribute to the income of the state in proportion to his ability to pay. Ability is the "ideal ethical basis of taxation. Every taxpayer should feel that he has made equal sacrifice in the payment of tax. The concept of ability to pay depends upon the bold concept of equity in taxation. Equity implies just tax payment. When the taxpayer is required to pay tax according to his ability to pay, it may be called equity in tax payment. As Dalton puts it, "the burden of taxation should be so distributed that the direct real burden on all tax-payers is equal." According to Seligman, “the basic point of the ability to pay principle is that the burden of society should be shared amongst the members of the society so as to conform to the principle of justice and equity." Adam S. (Wealth of Nations. 1779)

2. Principle of Economy

According to Adam Smith, "every tax ought to be so contrived as both to take out and keep out of the pockets of the people as the little as possible over and above what it brings into the public treasury of the state". This principle states that the minimum possible amount should be spent on tax collection and the maximum part of the collection should be brought to the government treasury. Adam S. (Wealth of Nations. 1779)

3. Principle of Certainty

Another important canon of taxation advocated by Adam Smith is certainty. According to him, "the tax which each individual is bound to pay ought to be certain and not arbitrary. The time of

payment, the manner of payment, the quantity to be paid, should be clear and plain to the Contributor and every other person." Adam S. (Wealth of Nations. 1779)

4. Principle of Convenience

According to Adam smith, "every tax ought to be levied at the time or in the manner in which it Is most likely to be convenient for the contributor to pay it." That is, the tax should be levied and Collected in such a way that convenient tax payer. It includes the selection of suitable objects for taxation, and choice of convenient periods for requiring payment. The canon of convenience Is a special form of the general principle that the public power should as far as possible adjust its Proceedings to the habits of the community, and avoid any efforts to directing the conduct of the citizens in order to facilitate its own operations. Adam S. (Wealth of Nations. 1779)

5. Principle of Productivity

According to this principle, the tax system should be productive enough i.e. it should ensure sufficient revenue to the Government and it should encourage productive activity by encouraging the people to work, save, and invest.

6. Principle of elasticity

The taxes should be flexible. It should be levied in such a way to increase or decrease the tax Revenue depending upon the need.

7. Principle of Diversity

According to this principle, there should be diversity in the tax system of the country. The burden of the tax should be distributed widely on the entire people of the country. The burden of the tax should be decentralized so that everyone should pay according to his ability. To achieve this, the Government should impose both direct and indirect taxes of various types.

8. Expediency Principle

According to this principle, a tax should be levied after considering all favorable and unfavorable Factors from different angles such as, economic, political, and social. Generally, every Government imposes tax to fulfill its normal social obligations in the form of defense, maintenance of law and order and socio-economic growth, but in actual practice, the tax policy is Determined by the pressures which are exerted on the government by different pressure groups in society. In practice, every legislature and every authority is pressurized by various economic,

Social and political groups to orient its taxation policy in certain directions. It is also clear that while choosing and imposing a tax, the authorities would be making a great blunder if they lose sight of the administrative feasibility, the cost of collection, and so on.

9. Canon of Simplicity

This principle states that the tax system should be simple, easy, and understandable to the common person. If the tax system is complex and vague, the taxpayer cannot estimate his tax Liability and it will cause irregularities in the payments and leads to corruption.

10. Canon of Co-ordination

In a federal set up like Ethiopia, Federal and State Governments levy taxes. Therefore, there Should be a proper co-ordination between different taxes imposed by various authorities. Otherwise, it will affect the people adversely.

11. Canon of Neutrality

This principle stresses that the tax system should not have any adverse effect. That is, it should Not create any deflationary or inflationary effects in the economy**.**

2.2. Empirical Literature

Taxation in developing countries is a challenging topic and has attracted increasing attention in the last two decades. During this period, many problems observed like poor administration, failing to collect sufficient tax revenues, lack of government and economic stability (Vadde & Gundarapu, 2012). As stated by Vadde and Gundarapu, any developing countries, like Ethiopia, has faced difficulty in raising revenue to the level required for the promotion of economic growth. Hence, the country has been experienced a consistent surplus of expenditure over revenue for sufficiently long period of time.

Many literatures suggest there are various determinants of tax revenue which includes the level of economic development, fiscal deficits and debt, trade openness, share of aid in GNP, population density, share of agriculture in GDP, and share of manufacturing in GDP, Tax evasion, inflation level, compliance level, foreign direct investment, weather condition, revenue outsourcing, ineffective implementation bylaw and other**.**

2.2.1. Empirical evidences on tax revenue in case of Ethiopia.

In Ethiopia there are some studies done on determinants of tax revenue and issues related with tax revenue. Among these some of them are reviewed as follows:

.Workineh A. (2016).There is no clear pattern of the significance of all the various potential determinants of tax performance in developing countries. Although, some results vary according to the period analyzed and the sample chosen, in general, indicators like GDP per capita, degree of financial deepening, higher degree of openness, urbanization rate, external debt, industrial share of GDP, and literacy rate have significant influence on tax revenue, and are usually associated with a higher level of taxation. Moreover, inflation, and share of agriculture to GDP are negatively associated with tax revenue.

Moges, (2018). Tax is the main component of government revenue that will use to finance all the government expenditure to stabilize the economy. The expenditure here means the used of government's revenue for the development and operational expenditure that will bring an economic growth. he looks the main determinants of tax revenue performances of the central government, and analyze the extent to which current GDP, share of investment in GDP, and share of education in GDP, trade openness (import and export of goods and services (% GDP), inflation consumer prices (annual %), debt to GDP ratio affect Ethiopian government tax revenue performances. the findings of the study show that investment and debt share of GDP had significant positive effect on tax revenue performance while the remaining variables had no significant effects.

Belay Z. (2015) on the research title determinants of tax revenue performance: in case of Ethiopia federal government. This study so investigated the determinants of tax revenue performance in Ethiopia federal government by using time series data from 1992-2013. The variables used were foreign direct investment, public debt, openness, foreign aid, inflation and gross domestic product. The study has employed both descriptive and time series regression method as well as Views software for analysis purpose. The trend of tax collection in Ethiopia is inconsistent, changing up ward and down ward depending up on economic conditions. However, in recent years it shows an incremental in total tax collection but performance of tax collection is decreasing from year to year. As an example, tax revenue was increased staring from 2003, because tax

base was added as the form of VAT and also GDP was the main contributor since it has been rapidly increased. The study reveals that growth 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. The study also provides recommendations that will be solve this problem and added tax revenue performance. Policy implication has been stated in this study for example government should adjust its fiscal policy and investment area should be selected based on their benefit for country.

Examine the major determinants of tax revenue in Ethiopia for the period ranging from 1975-2013, using Johansen maximum likelihood co-integration approaches. The result revealed that in the long run real GDP per capita income, foreign aid and industrial value added share of GDP positively and significantly affect tax revenue. Inflation exerted a negative and significant influence. Whereas, agricultural value added share of GDP and Education are not significant determinants of tax revenue in the long run. In the short run the result shows that real GDP per capita income and Inflation have negative and significant effect on tax revenue and industry value added share of GDP is positive and significant effect on tax revenue. Workineh (2015).

Belayneh A. (2018).The impact of the direct tax reform is different among households and factors. For households, a decrease in the direct tax causes to a higher disposable incomes, especially for urban non-poor households that involve in the labor market. Benefits to rural poor households were lower; because their income is depend on subsistence farming. Due to a reduction in the import and GDP reduction relative to the baseline, households affected by the rise in consumption prices, but for rural and urban non-poor households the disposable income increment out ways the price increment and thus experiencing improvements in their consumption patterns, as a result, their welfare is improved. The reduction in the direct tax creates income variation among factors of production. The sectorial analysis shows that the manufacturing sector tended to benefit more from the reforms than other sectors. Therefore, for countries like Ethiopia, which collects tax revenue below their capacity and unable to cover all the expenditures by their own capacity increasing the tax base is a good policy measure?

Minyichel B. (2017). Tax revenue may be affected by various factors such as inflation, unemployment, tax rates, level of actual income exchange rate and foreign direct investment. A number of studies have been done in Ethiopia as far as tax revenue is concerned but still not effective to test all factors thus the study was meant to identify factors affect tax revenue in Ethiopia. The

research approaches adopted in this thesis include collections of series data set that consists of seventeen years. The time period covered was 1999/00 to 2015/16. Secondary data were collected, coded and entered into Statistical Package for Social Sciences (SPSS, Version 20.0) for regression analysis. The findings from this research provide evidence that, inflation rate regression result shows negative significant, foreign direct investment in billions of birr shows negative significant, disposal income in billions of birr positive and significant, exchange rate has negative significant, unemployment rate have negative insignificant impact on tax revenue. The main conclusions drawn from this study are inflation rate, foreign direct investment; disposal income and exchange rate have significant impact on tax collection. Unemployment rate is insignificant variables affecting tax revenue. The study also provides recommendations that the policy makers come with policies to control the inflation rate in Ethiopia as it negatively affects tax revenue, the government to take care should be taken when attracting FDI to Ethiopia and it should be directed to more manufacture sectors of the economy; lobby for higher employee salaries since this will further contribute to higher tax revenue and Policies makers should undertake reduce unemployment by improved geographical mobility, stricter benefit requirements, Improve labor and employment

A set of factors that can potentially influence tax revenues such as GDP per capita income, industry value added share of GDP, agricultural value added share of GDP, trade openness, inflation rate; exchange rate and urbanization rate are considered in the econometric analysis. The result revealed that in the long run real GDP per capita income and exchange rate positively and significantly affect tax revenue for the period selected for this study. However, inflation exerted a negative and significant influence on tax revenue. Whereas, in the short run Real GDP per capita income and urbanization rate have negative effect, whereas agricultural value added share of GDP and exchange rate have positive effect on tax revenue in Ethiopia. Daniel (2017).

Dasalegn . (2014) the objective of the researcher was to analyze the role of VAT on economic growth of Ethiopia using the data from 2003 to 2012 based on theoretical and empirical evidences. To meet his objective, he used time series macro-economic data on GDP using VAT, total tax revenue excluding VAT, non-tax revenue and foreign revenue as independent variables. He employed Descriptive statistics and multiple regressions to analyze the data. The finding of the study reveals that as compared to sales tax, VAT boosts the general economic growth of Ethiopia but the issue of regressively resembling to sales tax still continues. During the periods under re-

view, the growth rate of VAT was 66.27% on average. For the periods of sales tax, the average growth rates of GDP were only 2.53%. However after executions of VAT, such growth rate reached about 21.9% on average. The analysis also showed as the average ratio of VAT to GDP becomes 2.95%. The finding also reveals that, VAT, total tax revenue and non-tax revenue except foreign revenue were significant at 5% level of significance but all of them positively contributed for economic growth during the periods under review. However, to be effective, it requires strong administrations and cooperation of the tax payers with taxing authority and the government in general.

2.2.2. Research Gap

Examining the effects of tax revenue on economic performance depends on identifying the factors affecting tax revenue because the role of tax revenue is imperative in bringing economic development, where its working or efficiency is determined by different socio economic and political factors. Furthermore, the ability to generate adequate fiscal revenue is determined by different socio economic and political factors, which may have different effects on tax revenue either negatively or positively. Therefore, the rationale understanding for low level of tax revenue poses remedial mechanisms to correct prevailing problems of tax revenue. Most empirical studies performed to investigate the determinants of tax revenue rely largely on cross-sectional and panel data set. In panel data set, it is not easy to distinguish country-specific behavior of tax revenue determinants, and hence country-level time series analysis is more appealing. To the knowledge of the researcher, a study on the determinants tax revenue in Ethiopia is scant.

Few studies in the literature like studies by Moges (2018)Dereje (2017),Belay (2016) have studied the tax performance of Ethiopian government. However, they studied only the tax performance of Ethiopia across regimes, they did not try to show what specific factors which affect the tax revenue generation of Ethiopia.

Workneh, (2015),Minyichel,(2017).Daniel,(2017). Belay, (2016).Have attempted to investigate the determinants of tax revenue in Ethiopia using different variables.

These studies incorporated sectorial variables like, agriculture value added share of GDP and industrial share of GDP. However, they did not include policy variables like inflation, interest rate unemployment rate and total government expenditure. Others on the contrary, international or-

ganizations and scholars (Organization for Economic Cooperation and Development, (2014); Aloo, (2012), Wawire, (2011) and Gupta, (2007) states that these policy variables are essential to be considered in studies in determining tax revenue performance in Ethiopia. But they studied only long run effect. Therefore, it is invaluable to investigate the determinants of tax revenue in Ethiopia with a special emphasis on the effect of policy variables of the economy.

As of researcher's knowledge, it has been some years ago that the studies on the determinants of tax revenue have been conducted. Thus, this paper is in a position to update how the current trends of the economic variables are affecting tax revenue , Moreover, the study tried to show the main factors which affecting tax collection focusing on Ethiopia. This study brought a light on the major determinants of tax revenue in the country taking an extended period of 25 years' time series data. In general, this study fills some gaps in the area of factors affecting tax revenue. The study also feeling that no study has been carried out on the factors unemployment, government expenditure, export, interest rate and disposal income affecting tax revenue in Ethiopia, as this may not be the only factors affecting tax Revenue**.**

2.3. Conceptual Framework

This section summarizes the framework or the model of the study in terms of variables relationships. Disposal income, interest rate, government expenditure and unemployment are considered as independent variables which impact on the amount tax revenue in Ethiopia

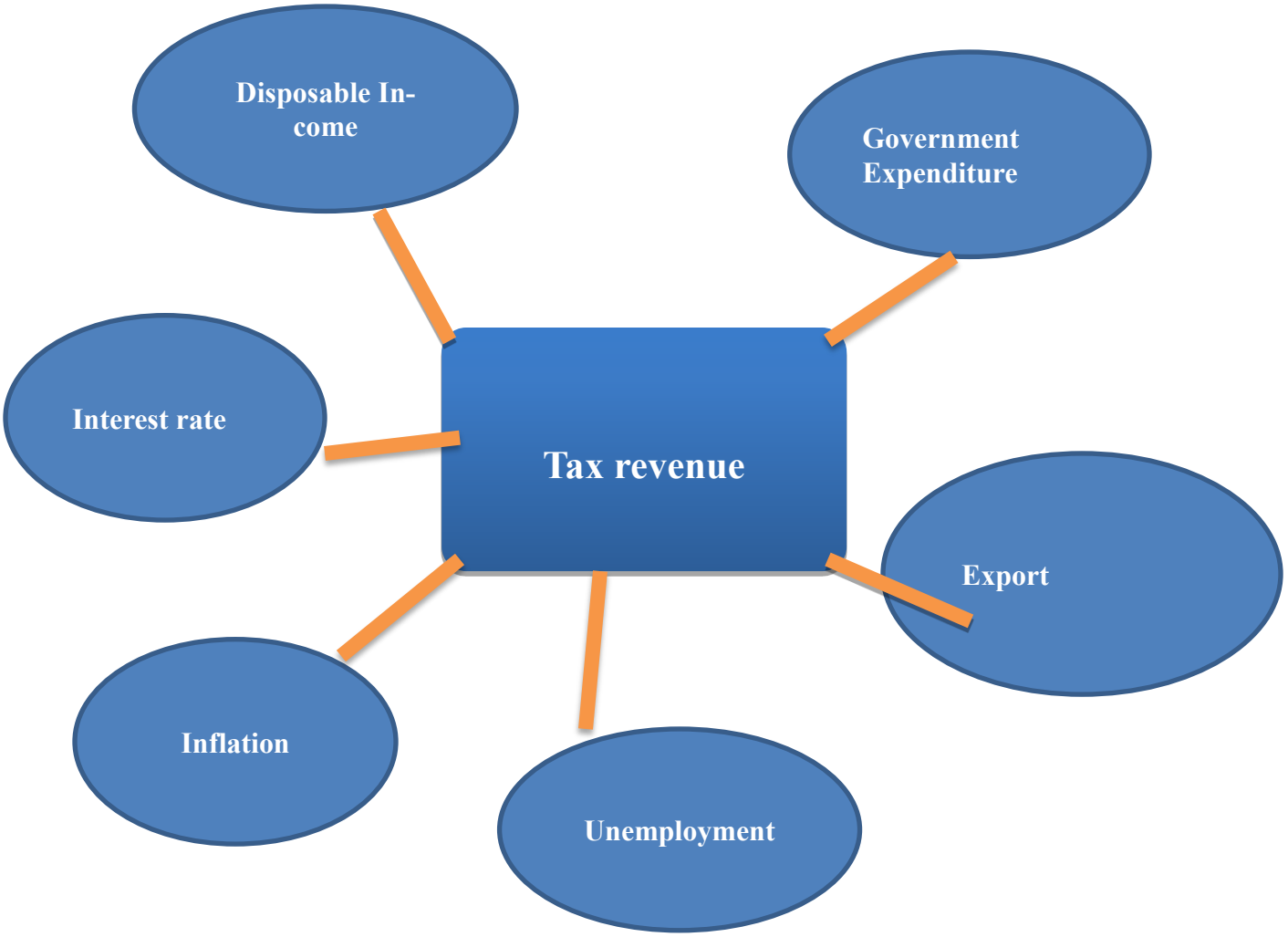


Fig 1.conceptualframe work

Source: Developed (constructed) by the researcher from different literature

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Research Design

The research design provides a general plan how the research objectives will be achieved and the process for collecting, analyzing, and interpreting the data (Saunders, Lewis, & Thornhill, 2007). The purpose of this study is to examine the factors influencing tax revenue in Ethiopia and examine the relationship between the dependent variable (Tax revenue) and the independent variables:- disposal income, interest rate, inflation, government expenditure, export, and unemployment the research work in descriptive nature. The study employed a time series data covering period of 1994/95-2017/18.

3.2. Type and Sources of Data

According to Kothari (2004) depending on the sources and techniques ones uses for gathering data it can be divided into primary and secondary data. He go by saying that primary data is data collected by using techniques like interviews, questionnaires and tests. The researcher employed secondary data. On the other hand secondary data refers to documents that have been organized before. The study uses quantitative approaches where by all data were measured in a way that gives meaningful numerical results so,

The study uses secondary sources of data from various government offices. The major data sources of the study are found from Ethiopian Revenue and Custom Authority (ERCA),Addis Ababa city administration and custom authority, Ministry of Finance and Economic Development (MoFED), National Bank of Ethiopia (NBE) ,World Bank data base(WB) and Central Statistics Agency (CSA). Data were collected by reviewing different documents, annual reports, financial statements, published and unpublished statistical data from 1994/95 to 2017/18 so as to accomplish the objectives of the paper.

3.2.1. Methods of Data Analysis

This study was developed based on descriptive analysis . It provides the descriptive analysis of time serious data and variables for the study of collaboration analysis between dependent and independent variables, deals the results of the data analysis that constitutes the findings of the study.

3.2.2. Descriptive Statistics

Descriptive data analysis is vital in determining the statistical properties of the model in order to select the proper functional form of the estimated model (Chrstina, 2013). The descriptive statistics explores and presents an overview of all variables used in the analysis.

3.2.3. Econometrics Model Specification

The assessment of actual and potential tax performance of any country is a matter of judgment that should be based on a consideration of the stage of development and structure of the economy and should also take account of national traditions and relevant special circumstances (Chelliah, 1971).

Therefore, 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. Various studies included different variables while analyzing the determinants of tax revenue in Ethiopia . For instance, Minyichel (2017)analyze the factors that affect revenues from taxes by the revenue government. The main objective of his study is to explore the factors affecting tax revenue in Ethiopia by using a secondary data and multiple variables regression model. Tax revenue may be affected by various factors such as inflation, unemployment, tax rates, level of actual income exchange rate and foreign direct investment

Moges (2018)(Inflation rate, trade openness, debt share of GDP, investment share of GDP, expenditure on general education, current GDP) and investigated their effect up on tax revenue performance in the country.Daniel(2017).A set of factors that can potentially influence tax revenues such as GDP per capita income, industry value added share of GDP, agricultural value added share of GDP, trade openness, inflation rate; exchange rate and urbanization rate are considered in the econometric analysis. The result revealed that in the long run real GDP per capita income and exchange rate positively and significantly affect tax revenue for the period selected for this study.

However, in developing the tax model including all variables is impossible due to unavailability of data and small sample size problem. Therefore, following empirical literatures, this study attempts to empirically investigate the effect of policy disposable income, interest rate .inflation rate, export, government expenditure, unemployment.

3.2.4. Method of Data Analysis

The study employed both descriptive and econometric analysis. While the descriptive analysis helps to capture the trend analysis, econometric analysis is employed to capture the short run and long run relationship between tax revenue and its determinants. The Stationary of the data used in the analysis is first checked using Augmented Dickey Fuller (ADF) test. Diagnostics test conducted before estimation. Diagnostics tests of CLRM assumptions including Granger causality, stability, normality and autocorrelation tests were conducted. Pearson correlation analysis was conduct due to measure the degree of association between the variables under consideration. F-test was made to check the significance level of all explanatory variables. The P-value was used to determine the significance of the constant term and the coefficients terms for the estimation. The importance of each explanatory variable was determined by F-test at 95% confidence level. The adjusted R2 was used to measure the strength of explanatory variables to explain the variations in the explained variables.

Unit Root Test

The use of existing unit root test in statistics is to investigate whether a time serious data has got a unit root or not. During investigation if a time serious data has got a unit root in it, it will be difficult to deal with. It means a long run and can only be deal with a time period. Therefore, if a time serious data have got a unit root, it has to be dealt first before during a long run phenomenon of the time serious data (Neway, 2017).The results of the unit root test leads to the test for the existence of a stable long-run relationship.

To deterministic non-stationary and what it required is defriending Harris, (1995) sited in Roman (2012). It should be use the popular test in order to test for the existence of a unit root in time series. It is Dickey-Fuller test.

Co-integration Tests

Co-integration analyses have customized to time series analysis and as such further economic theory in explaining the relationship between economic variables. The forerunners to the co-

integration analysis may be separated into two main sections where statisticians and econometricians used time series data in different ways. Primarily, assuming that the non-stationary of time series did not affect empirical analysis the econometricians utilized the classical linear regression model (CRL). The main problems to be dealt with in this regard were simultaneity and autocorrelation (Granger and New bold, 1974). Secondly, according to Kennedy, (1998) time series analysts were inclined to avoid the dilemma of stationary by differencing data as much as necessary to make it stationary. After the unit root test, it was found out that the variables were either I (0) or I (1). The co-integration test under Johansen, (1988) maximum likelihood co-integration procedure was followed to determine whether variables enter into a long run relationship. The existence of co-integration is confirmed if the number of co-integrating vectors is greater than zero. The existence of co-integration implies the existence of a long run relationship. Short-run dynamics captured using the vector error correction models (VECM).

Granger Causality Test

The dynamic relationship is the simplest technique to use to examine the cause and effect relationship between variables and it is applied in the context of the simple linear regression model. However, the simple linear regression model fails to capture the underlying dynamic causality between variables which is efficiently analyzed by Granger (1969) in terms of the Granger causality tests. Before using the multivariate Granger causality test one has to ensure that all the variables are stationary in levels. If there is co- integrating vector, multivariate Granger causality tests are executed through first differencing the variables of the vector auto regression (VAR) model. If the variables are co -integrated Granger causality tests can be done through the use of the vector error correction (VEC) model. This is supported by Engle and Granger (1987) who argue that if two time series are co-integrated then they are necessarily causally related. It is therefore important to test for stationary properties of variables before operationalizing the Granger causality tests. Later, Sims (1972) contended that Granger causality in a bivariate system is primarily due to an omitted variable, which may cause either one or both variables in the unvaried system.

3.2.5. Definition of Variables

In the propose study, instruments are to measure nine continuous independent variables and one continuous dependent variable. These are:-

3.2.5.1. Dependent Variable

The dependent Variable of this study is amount of tax revenue. Amount tax revenue is defined as the revenues collected from taxes on income and profits, social security contributions, taxes levied on goods and services, payroll taxes, taxes on the ownership and transfer of property, and other taxes. It is the total amount of tax collected during each year by the government only from tax sources. Generally, the amount of tax revenue is the income that is gained by Ethiopian government through taxation.

3.2.5.2. Independent Variable

Factors which affect the tax revenue collection of the Ethiopia revenue authority, nine independent variables should be collected from different studies. The variables namely;

Disposable income:-The portion of an individual's income over which the recipient has completes discretion. Income includes wages and salaries, interest and dividend payments from financial assets, and rents and net profits from businesses.

(DPI), is the amount of money that households have available for spending and saving after income taxes have been accounted for.

Disposable income, also known as disposable personal income (DPI), is the amount of money that households have available for spending and saving after income taxes have been accounted for. Disposable personal income is often monitored as one of the many key economic indicators used to gauge the overall state of the economy (The Editors of Encyclopedia Britannica).

Interest Rate:- the proportion of a loan that is charged as interest to the borrower typically expressed as annual percentage of the loan outstanding. Reduce interest rates encourage people to spend money on home improvements. Every person getting income from interest on deposits shall pay tax at the rate of 5%. The payers are required to withhold the tax and account to the Tax Authority

Inflation:-is a sustained rise in the general price level of goods and services in an economy. It is the proxy for macroeconomic stability of a country. High inflation rates when combined with payment and collection lags adversely affect tax revenues through several channels. In most of the country's economy including Ethiopia, CPI is used to measure inflation. The consumer price index expresses the current prices of a basket of goods and services in terms of the prices during the same period in a last year.

Inflation is a steady increase in price levels of items and is measured annually (Arnold 2014). Price level is measured in form of index. Anderton (2008) asserts that the main causes of inflation are increased demand and rising costs. Excessive demand in the economy causes demand pull inflation, meaning that too much demand in the economy causes price levels to rise. Rising costs on the other hand lead to cost push inflation.

Government Expenditure:- government spends money toward the supply of good and service that are not provided by the private sector but are important for the nation's defense infrastructure health and welfare benefit. Generally, Government has to render enormous range of social activities, which incur heavy expenditure. A part of the expense is sought to be raised through taxation.

Unemployment:-number of people who are actively looking for a job as a percentage of labor force**.** Begs, Fischer and Dornbusch (2008) defines unemployment as rate as the fraction of the labor force without a job.

The rate of unemployment should be reduced this will mean more people will be employed thus increase level of disposable income and at the end increase tax collection. (Gladys, 2016).

Export:-is a function of international trade where by goods produced in one country are shipped to another country for future sales or trade exports are crucial components of countries economy as the sales of such goods adds the producing nations gross output. Trade liberalization in Ethiopia can be classified in to export promotion and import substitution. Ethiopian government eliminated restriction on exporter to promote the export.

CHAPTER FOUR

RESULT AND DISCUSSION

This chapter presents analysis, findings and discussions of the study as set out in the research objective and the research methodology. The aim was to establish the factors affecting the amount of tax revenue in Ethiopia. The data was gathered exclusively from the secondary source which is Ethiopian revenue and custom authority, Ministry of Finance and Economic Development of Ethiopia; National Bank of Ethiopia; Central Statistical Authority and World Bank In this chapter data discussed through descriptive statistics

4.1.Trend Analysis

Under this sub-topic the trends of each of the variables were discussed below

4.1.1. Tax Revenue

The data below show a trend of tax revenues for the year 1994 to 2018, accordingly, the trend shows from the year 1995 to 2005 didn't show much significant difference; since 2000 to 2005 the changes of the tax show somehow a better increment than the previous years. However, the trend analysis indicates the tax revenue shows a significant increment since 2005 up to the ends of the trend graph. It is possible to understand that the tax collection was increasing significantly particularlyaftertheyear2010.

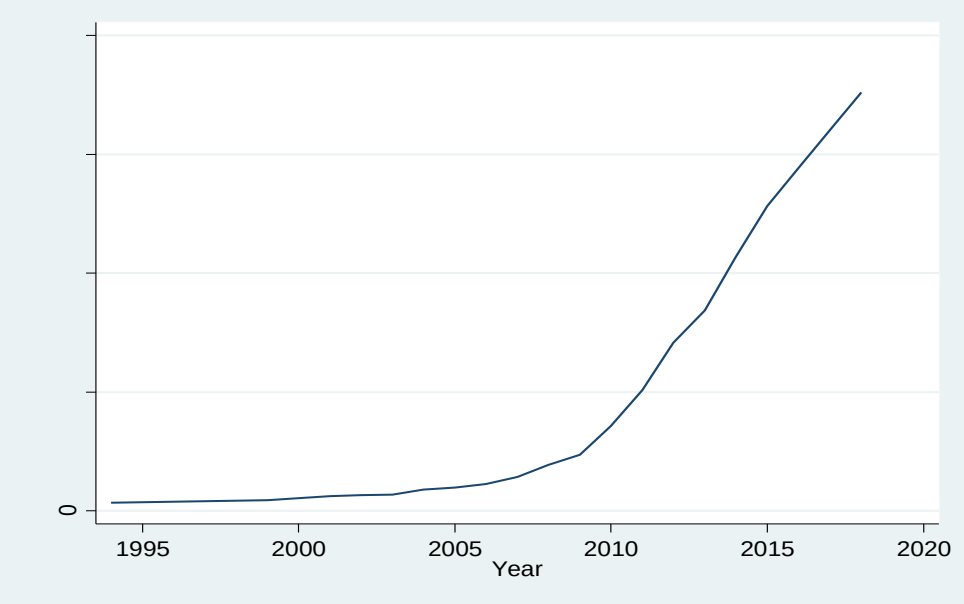


Figure 2. Trends of Tax Revenue

4.1.2. Disposable Income

Theoretically the concepts of disposable income are what income left for consumption and saving or indirectly the income remaining after tax. Therefore, here the trends of the disposable income would be discussed in detail. Accordingly, overall the countries disposable income shows an increasing trend; however, it shows a different increment rate. From the year 1995 to 2000 the growth of disposable income was at slow rate, whereas, the increasing rate of disposable income shows a better increment rate for the next five years. Since the beginning of 2006 the disposable income grows at a faster rate. Furthermore, after they year 2015 the disposable income increases almost in a very high rate which shown vertically slop in the chart below.

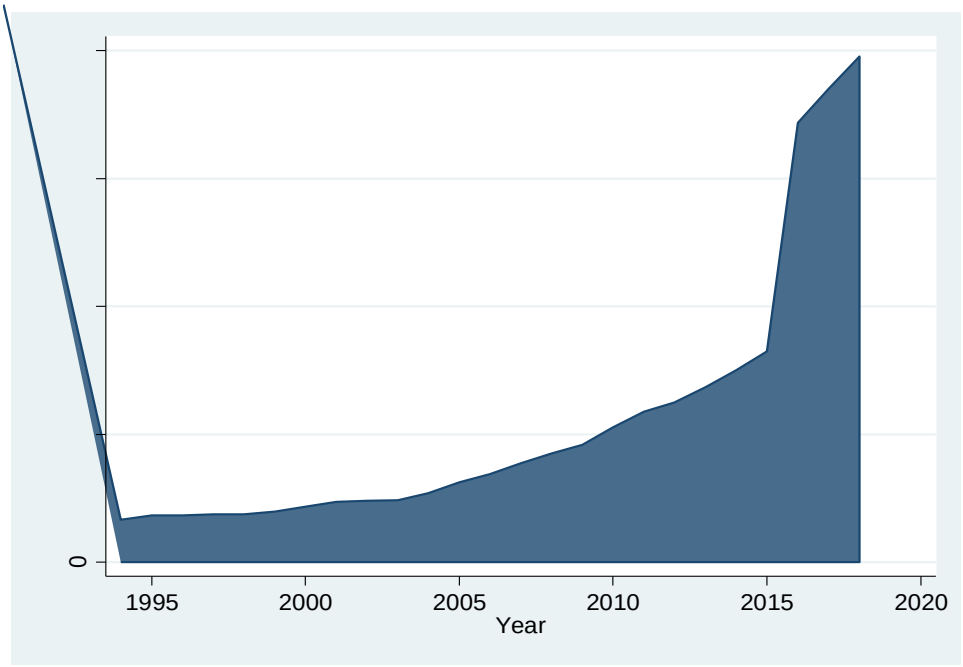


Figure 3.Trends of Disposable income

4.1.3. Export and Import

It is obvious Ethiopia had a current account deficit balance meaning that the imports of the country are greater than the exports of the country. The trend graph below shows there is high gap between the imports of the country and the exports of the country. At the beginning of the trend meaning that around the year 1995 the imports and exports of the country were proportional. However, as the year goes up the difference between the import and import also increases; which indicates the country's export couldn't fit the countries import. Not only there is a difference between import and export, but also the increasing trend of the import and export also had much different, the import of the country increases in a very high increasing rate particularly starting from the year 2010 the imports of the country increase in a very high increasing rate. However, the exports of the country increase at a slow rate.

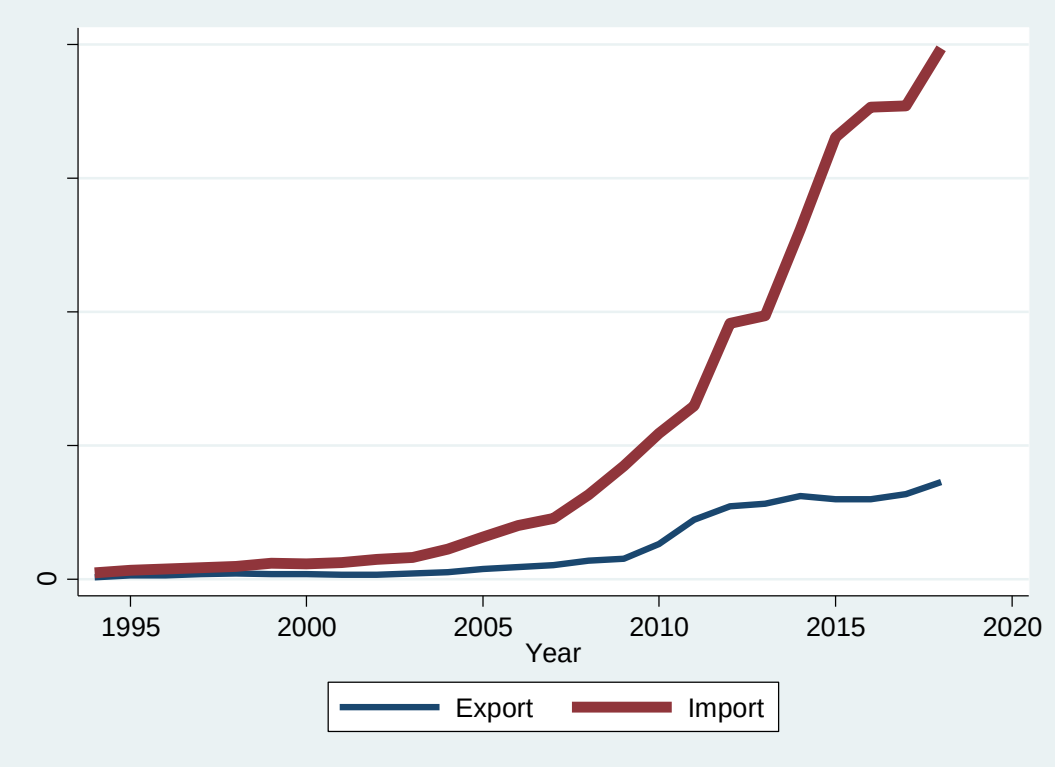


Figure 4.Trends of Ethiopian Export and Import

4.1.4. Government Expenditure

Government expenditure is one of the components of GDP, which has a direct implication on the collected tax revenue. The good thing is the Ethiopian government expenditure is increasing time to time as shown in the trend graph below. The government expenditure was increases at a very slow rate up to the year 2005, since 2005 the government expenditure increases at better increasing rate than the previous five years; however, since the year 2010 the countries government expenditure starts to increase at a significant rate; this is due to the government starts huge projects including, dam, light weight railway and other related and unrelated local projects which accelerate the government spending. Particularly, the two growth and transformation plan contributes much for the significant increment of government expenditure.

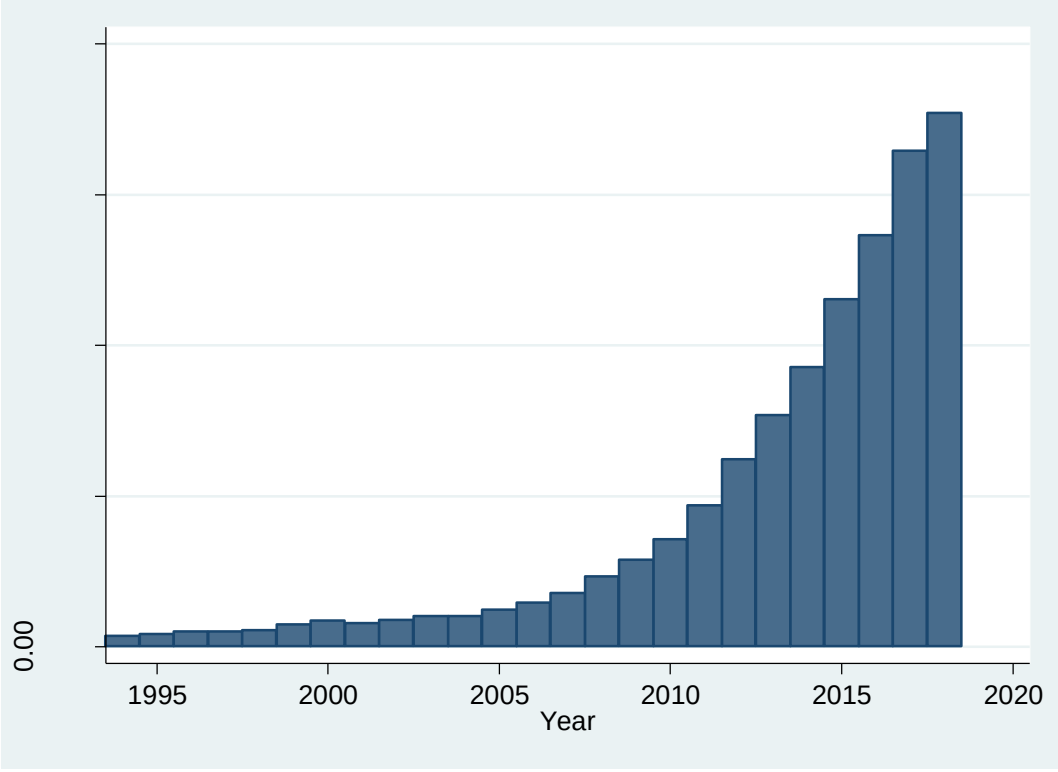
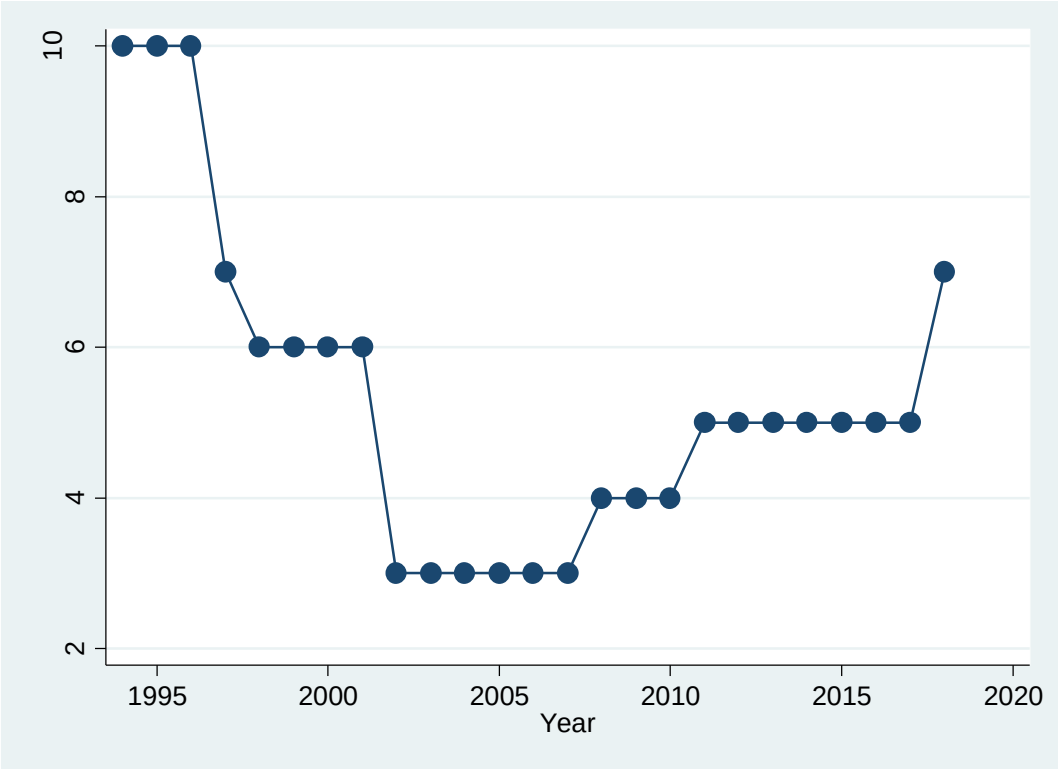


Figure 5.Trends of Ethiopian Government Expenditure

4.1.5. Interest Rate

Under this sub-topic the trends of the interest rate would be discussed; as shown in the graph below the interest rate of the country shows some fluctuations. At the beginning of the trend graph the change seems constant or didn't show a change at all; after that the trend shows a significant decline until it reaches some points which remain constant. Between the year 1998 and 2000 the interest rate shows again a constant trend; where; after the year 2000 the trend continuously decline until the year 2002; after the year 2002 up to the year 2008 the trend of the interest were constant. After this year the trends of the interest rate follows the same trend like the previous years; it goes up for some year and goes down for some year.

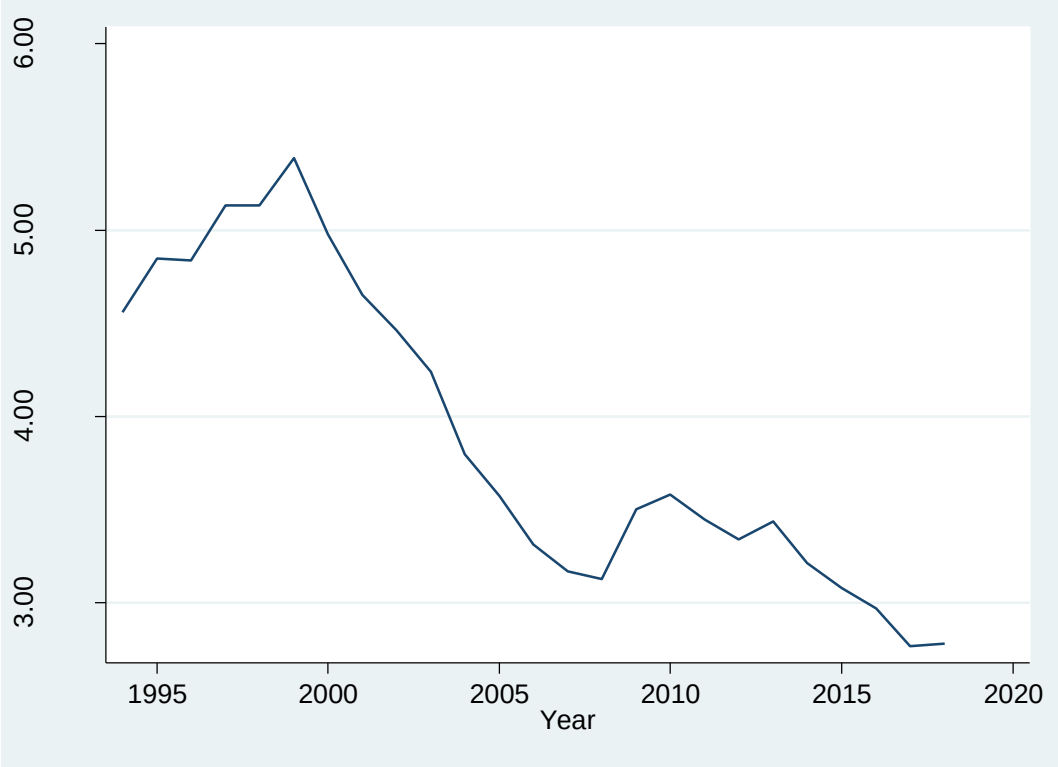


Source: NBE

Figure 6 Trends of Ethiopian Interest rate

4.1.6. Unemployment

Over all the trends of unemployment shows a decreasing trend; although it has some fluctuations at the middle of the trend. Up to the year 1999 the trend shows an increasing trend; since the year 2000 the unemployment trend map shows a decreasing trend, this continuous up to the year 2008. Between the year 2008 and 2010 the trend shows an increasing trend. Since the year 2010 the unemployment trend graph shows a decreasing trend.



Source : world bank

Figure 7. Trends of unemployment

4.2.Descriptive statistics of variables

Within the period of 25 years between 1994 and 2018 on average Ethiopia was collecting 43.7 billion birr per year; where 3.42 billion was the minimum collection and 176 billion was the maximum collection. The maximum collection was made in 2018 and the minimum was made in the year 1994. The maximum interest rate was registered as 10 percent and the minimum was 3 percent with this the period 1995 and 2018; within these 25 years the average interest rate was 5.32. . In Ethiopia between 1994 and 2018 the maximum inflation was 55.24 percent which was registered in the year 2008 and the minimum was -10.8 recorded in the year 2001. Within these 25 years the average inflation rate was 13.69. On average Ethiopia spend 3.01 billion birr per year for import and generating 654 million birr from export. Apart from these, the maximum import was 10.9 billion birr and the maximum export was 2.01 billion birr which has a significant trade balance deficit.

Table 5 . : Descriptive statistics of anticipated variables

Variable	Obs	Mean	Std. Dev.	Min	Max
Tax Revenue	25	43709.05	56006.77	3419.09	176102.8
Disposable Income	25	550940.2	527207.7	166457	1977164
Interest	25	5.32	2.15484	3	10
Inflation	25	9.9907	13.69275	-10.77339	55.24131
Import	25	3.01+09	3.61E+09	1.31+08	1.09E+10
Government Expenditure	25	86539.67	106537.7	7093.8	354205.3
Unemployment rate	25	2.63992	.6042256	2.77	5.38

4.3. Econometric results

4.3.1. Test of Stationary and Co-integration

4.3.1.1.Stationary Test

In order to use a time series data for regression the data should be free from unit root problem or all of the variable should be stationary; for the purpose of this study augmented dickey-fuller unit-root test was used. Accordingly, all of the variables had got a unit root problem at level, therefore in order to avoid the problem first difference of the variables were taken, all of the variables become stationary at first difference; therefore, in order to run the regression with same order the first difference of all of the variables were taken.

Table 6. : Unit root test of each variable

Variables	Difference level	**Test statistics**	**5% critical value**	**p-value**	**Coefficient of L1**	**Result**
Tax Revenue	1st D	-2.396	-1.721	0.026	-.4390305	Stationary
Disposable Income	1st D	-4.002	-1.721	0.001	-.8648767	Stationary
Interest rate	1st D	-4.144	-1.721	0.000	-1.008721	Stationary
Inflation	1st D	-6.942	-1.721	0.000	-1.392834	Stationary
Export	1st D	-2.239	-1.721	0.036	-.4194243	Stationary
Government Expenditure	1st D	-3.704	-1.721	0.001	-.8068313	Stationary
Unemployment	1st D	-3.636	-1.721	0.002	-.7093136	Stationary

4.3.1.2.CO-Integration Test

The basic idea behind co-integration is that if, in the long-run, two or more series move closely together, it is possible to regard these series as defining a long-run relationship, as the difference between them is stationary. Lack of co-integration implies that such variables have no long-run relationship; Johansen co-integration Test technique is employed to test the presence of co-integration between the series of the same order of integration through forming a co-integration equation (Onyekachi and Vincent, 2017).In Johansen test Variable must non stationary at level but when convert into first differenced, they must be stationary.

NULL: There is no co-integration among variables

All: There is co-integration among variables

Under the Johansen co-integration Test, there are two co-integrating equations, trace statistics and critical values. The trace statistic determines whether co-integrated variables exist. In Johansen's method, the Eigen value statistic is used to determine whether co-integrated variables exist. Co-integration is said to exist if the values of computed statistics are significant and different from zero. Also, their Eigen-values are significantly greater than zero. For the purpose of decision we are going to compare the 5% critical value and trace statistics. Furthermore, the Eigen values of tax revenue, disposable income, inflation, interest rate, government expenditure, and unemployment are significantly greater than zero. In other words, the null hypothesis of no co-integration among the variables is rejected. The test result shows the existence of a long-run relationship in four co-integrating equations at 5% significance level. From the result, co-integration

is said to exist since the trace statistics co-integrating. This implies that there is a long run relationship among the one dependent variable and four independent variables. Therefore, according to the result there are zero co-integration equations for tax revenue disposable income ,interest rate Inflation, export, Government expenditure and unemployment, These variable are go together in the short-run.

Table 7: Johansen Tests for Co-integration

		Johansen tests for co- integration			
					Number of obs =22
					Lags = 2
maximum rank	Parms	LL	Eigenvalue	Trace statistic value	5% critical value
0	56	-983.74891	.	263.0931*	124.24
1	69	-925.8813	0.99347	147.3578	94.15
2	80	-898.94225	0.90392	93.4797	68.52
3	89	-879.14982	0.82113	53.8949	47.21
4	96	-866.79302	0.65853	29.1813	29.68
5	101	-856.57642	0.58869	8.7481	15.41
6	104	-852.20238	0.31638	0.0000	3.76
7	105	-852.20238	0.00000		

4.3.1.3.Lag 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 results in rejection of the null hypotheses too easily, while too many lags decrease the power of the test (Verbeek, 2004).However, one cannot conclude as the optimal lag is one only looking the selection criteria. Hence, to further confirm the relevance of the chosen optimal lag length for all variables, a test of lag exclusion [Wald lag exclusion test] is conducted see table 4.\ It shows that the inclusion of a single lag length for each variable individually and for all the system jointly is significant for all variables at 1% level of significance. Four criteria are suggesting choosing lag 3 which are LR, AIC, HQIC and SBIC, criteria the lower the value bests the mode.

Table 8: Lag Selection Order Criteria

Number of obs = 21

Lag	LL	LR	Df	P	FPE	AIC	HQIC	` SBIC
0	-999.524		49	0.000	1.0e+33	95.8595	95.935	96.2076
1	-860.268	278.51	49	0.000	2.5e+29	87.2636	87.8681	90.049
2	-364.114	992.31	49	0.000	7.6e+11*	44.6775	45.811	49.9001
3	3443.05	7614.3*	49	0.000	.	-313.91*	-312.323*	-306.598*
4	3354.35	-177.4	49	.	.	-305.462	-303.875	-298.151

Lag 3 is selected by four criteria which are LR, AIC, HQIC and SBIC, these criteria suggested the lower the value bests the mode.

4.4. Short Run Model estimation Results

In the classical simultaneous equation models involving m endogenous (i.e. dependent) variables, there are m equations, one for each endogenous variable. Each equation may contain one or more endogenous variables and some exogenous variables. Before these equations can be estimated, we have to make sure that the problem of identification is solved, that is, whether the parameters or set of parameters can be consistently estimated. In achieving identification, often arbitrary restrictions are imposed by excluding some variables from an equation, which may be present in the other equations in the system. Thispracticewasseverelycriticizedby-Sims,whoarguedthatiftherearem endogenous variables, they should all be treated on an equal footing; there should not be any distinction between endogenous and exogenous variables. So each equation should have the same number of repressors. It is for this reason that Sims developed the VAR model.

$$TRV=\beta 0+\sum_{k=0}^{n}\beta 1(Lmdin)+\beta 2(lmint)+\beta 3(Lminf)+$$

$$\beta 4\ \ (Lmexp)\beta 5(Lmgoex)+\beta 6(Lmune)+e \quad \ldots\ldots 1$$

Where,

TRV….. total tax revenue

$\beta 0$ ….. constant term

$\beta 1 - \beta 6$…… parameters

L …… lags

M …… numbers of lags

Din…. disposable income, int….. interest rate, inf…… inflation, exp …exoort ,
goex ….. government expenditure and une.…… unemployment

Economic theory is not always rich to provide a dynamic specification that identifies all of relationships between dependent and independent variables Estimation and inference are complicated by the fact that endogenous variables may appear on both the left and right sides of the equations in the model. However the Vector Auto Regressive (VAR) approach avoids the need for structural modeling by treating every variable as explained in the system as a function of the lagged values of all explanatory variables in the system (Roman, 2012). VAR are spurious and misleading (Mukhopadhyay and Pradhan, 2010). Moreover, utilizing properly differenced variables in the VAR may lead to model specification, if the level variables share the short run relationship or they are no co-integrated. In this case, using a Vector Autoregressive Model (VAR) is better.

The VECM specification restricts the long-run behavior of the exogenous variables to converge to their co-integrating relationships while allowing a wide range of short-run dynamics. The co-integration term is known as the error correction term since the deviation from long-run equilibrium is corrected gradually through a series of partial short-run adjustments.

For this study VAR model is appropriate.

Table.9. out Come of VAR Model.

		Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
TAXREV	**TAXREV**						
	L1	4.558196	2.40e-10	1.9e+10	O.OO	4.558196	4.558196
	L2	3.570561	1.21e-10	2.9e+10	O.OO	3.570561	3.570561
	L3	-4.693669	1.75e-10	-2.7e+10	O.OO	-4.693669	-4.693669
	DIN						
	L1	.1257897	3.28e-12	3.8e+10	O.OO	.1257897	.1257897
	L2	-.2132722	9.34e-12	-2.3e+10	O.OO	-.2132722	-.2132722
	L3	.6274704	2.60e-11	2.4e+10	O.OO	.6274704	.6274704
	INTR						
	L1	4881.498	2.93e-07	1.7e+10	O.OO	4881.498	4881.498
	L2	1291.575	1.45e-07	8.9e+09	O.OO	1291.575	1291.575
	L3	-2755.61	1.87e-07	-1.5e+10	O.OO	-2755.61	-2755.61
	INFR						
	L1	-455.713	2.15e-08	-2.1e+10	O.OO	-455.713	-455.713
	L2	-794.6821	4.13e-08	1.9e+10	O.OO	-794.6821	-794.6821
	L3	-332.5449	2.00e-08	-1.7e+10	O.OO	-332.5449	-332.5449
	EXP						
	L1	-.0055409	3.07e-13	-1.8e+10	O.OO	-.0055409	-.0055409
	L2	.0013881	4.04e-14	3.4e+10	O.OO	.0013881	.0013881
	L3	-.0069459	3.38e-13	-2.1e+10	O.OO	-.0069459	-.0069459
	GOX						
	L1	70858.68	3.78e-06	1.9e+10	O.OO	70858.68	70858.68
	L2	-33857.61	2.07e-06	-1.6e+10	O.OO	-33857.61	-33857.61
	L3	-60710.3	3.22e-06	-1.9e+10	O.OO	-60710.3	-60710.3
	UNE						
	L1	-19182.5	1.10e-06	-1.7e+10	O.OO	-19182.5	-19182.5
	L2	-10794.29	2.47e-07	4.4e+10	O.OO	10794.29	10794.29
	L3	11274.93	8.03e-07	1.4e+10	O.OO	11274.93	11274.93
	CONS	91184.3	8.81e-06	1.0e+10	0.00	91184.3	91184.3

Source : model result

In this model there is no long run casualty here is only short run causality running from independent variable to dependent variable All the coefficient are short run coefficient. The variables are significant all on their lag. So; they explain the dependent variable which is tax revenue.

Vector Auto regressive model was used to estimate the tax revenue; most of the variables were not stationary at level; however they become stationary at first difference. The VAR model shows that all of the six variables were statistically significant at 1 percent significant level in their first, second and third lag to explain the dependent variable.

Accordingly, disposable income had a positive and significant effect both in the first and third lag. But negative significant effect on tax revenue in the second lag. The analysis shows that a percentage change in the first lag of disposable income is associated with a 0.00125 percent increase in tax revenue and a percent change in the third lag, increase tax revenue by 0.0062 percent, but a percent change in second lag of disposable income is associated with 0.0021 percent decrease in tax revenue citrus paribus.

Interest rate had a positive significant effect in first and second lag on tax revenue. A percent change in first lag of interest rate government revenue increase by 48.81 percent. And a percent change in second lag of interest, government revenue increase by 12.91 percent. But a percent change in third lag of interest rate, government revenue decreased by 27.55 percent .

According to the result inflation rate had a negative significant effect on tax revenue in first second and third lags. A percent change in the first second and third lag of inflation, tax revenue decrees by 4.55,7.94 and 3.32 percent respectively.

Export of the country also had a positive and significant effect on tax revenue in second lag a percent change in export tax revenue increase by 0.000013 percent , percentage change in the first and third lag of export decrease tax revenue significantly by 0.000 055 and 0.000069 percent.

Government expenditure also had a positive significant effect in its first lag but a negative significant effect in its second and third lag. A percentage change in the government expenditure increases the tax revenue by 70.86 percent. In the second and third lag a percent change in government expenditure tax revenue decrease by 33.86 and 60.71 percent respectively. On the other hand unemployment had a negative and significant effect on tax revenue in its first and second lag but not in the third lag; accordingly, a percentage change in first and second lag of unemployment is associated with 19.18 and 10.79 percent decrease in tax revenue. But percentage change in third lag of tax revenue increase by 11.27 percent.

4.4.1. Result of the Model

From table 10 disposal income in billions of birr has p value of 0.000 which is positive significant at 1%, interest rate has p value 0.000 which is positive significant 1%,inflation rate has p value 0.000 which is negative significant at 1%,export in millions of birr has p value 0.00 which is negative significant at 1%,government expenditure has p value 0.000 which is negative significant 1%, and unemployment rate has p value 0.00 which is negative significant at 1%,

TRV=$\beta 0 + \sum_{k=0}^{n} \beta 1(\mathrm{L}mdin) + \beta 2(lmint) + \beta 3(\mathrm{Lminf}) + \beta 4$ (Lmexp)β5(Lmgoex)+ β6(Lmune)+e……

TRV=91184.3+(0.1257897-0.2132722+0.6274704)DIP+(4881.498+1291.575-2755.61)INT+(-455.713-794.6821-332.5449)INF+(-0.0055409+0.0013881-0.0069459)EXP+(70858.68-33857.61-60710.3)GOV+(-19182.5-10794.29+11274.93)UNE

91184.3+ (0.54) DIN+ (3417.46) INT-(1582.94) INF-(0.011) EXP-(23709.23) GOEX-(18701.86) UNE

(0.000)*** (0.000) *** (0.000) *** (0.000) *** (0.000) *** (0.000) ***

Based on short run model estimation result, it can be concluded that disposable income and interest rate have positive effect on tax revenue where as inflation, export, government expenditure and unemployment have negative significant effect on tax revenue.

Disposable Income

Null: disposable income and tax are positive relation ship

ALL; disposable income and tax are negative relation ship

The result above revealed that tax revenue and disposal income (Level of actual income) has positive relationship. From a result obtained, it disclosed that holding other factors constant, when level of actual income increase by 1%, tax revenue will increase by 0.0054 percent and statistical significant . Disposal income in billions of birr has positive significant effect on tax revenue at 1% confidence interval. Under progressive tax system, the rate of taxation increases as the tax base increases. That is, the burden of taxation is heavy upon the rich than on the poor. People with higher income tend to have a higher percentage of that in disposable income, and can thus afford a greater tax burden. Thus, this system secures equality in sacrifice by ensuring the principle of ability to pay. Progressive tax system is elastic in nature to meet the increasing

public expenditure. The government can easily raise its revenue by increasing the rates of taxes. In the case of progressive taxation, raising the rates for the higher status alone can raise more revenue. The same result obtained by (Minyiche 2017). When level of actual income increase by 1%, tax revenue will increase by 0.146 and statistical significant at 1%. From the result researcher concluded that even if previous researcher didn't done in Ethiopian context disposal income in billions of birr has positive significant effect on tax revenue at 99% confidence interval.

Therefore, the null hypothesis is failed to reject at 5% significant level. Our findings support this theory in the sense that the relationship between tax revenue and the level of disposable income is positive, which means people who earn more, contributes more to taxation.

Interest Rate

Null:-: interest rate and tax revenue has positive relation ship

ALL:-interest rate and tax revenue are negative relation ship

The proportion of a loan that is charged as interest to the borrower typically expressed as annual percentage of the loan outstanding. Reduce interest rates encourage people to spend money on home improvements. Every person getting income from interest on deposits shall pay tax at the rate of 5%. The payers are required to withhold the tax and account to the Tax Authority.

The result above revealed that tax revenue and interest rate positive relationship From a result obtained, it disclosed that holding other factors constant, when level of interest rate increase by 1%, tax revenue will increase by 34.17 percent and statistical significant at 1%. Interest rate in billions of birr has positive significant effect on tax revenue at 1% confidence interval. From the result researcher concluded that even if previous researcher didn't done in Ethiopian context interest rate in billions of birr has positive significant effect on tax revenue at 95% confidence interval. As per researcher point of view the increase interest rate people encourage to save money in bank and from deposit they pay tax so when increase interest rate more people save and more tax will paid from the gain. There for, the null hypothesis accept rather than reject meaning interest rate and tax revenue have positive relationship.

Inflation

Null: inflation and tax are positive relation ship

ALL; inflation and tax are negative relation ship

Inflation from regression result shows that has negative significant impact on tax revenue at 1% significant level the result depicts the p value of 0.000 and its coefficient result shows negative 26.02 but this relationship has raised conflict among different researchers. Example, result supports prior expected sign of the coefficient as found by Tesfaye (2015), Daniel (2017), Ghura (1998) and Madhavi (2008).Workineh(But Belay (2015) relationship between tax revenue and inflation is positively related in Ethiopia. As a result, increasing of inflation resulted in decrease in tax revenue. The regression result revealed, holding the other factors constant, when inflation increase by 1%, tax revenue will reduce by 15.82. because the rise of price in goods and service reduce the purchasing power of each unit of currency, Input price are higher, consumer can purchase fewer good, the revenue and profit decline people not save because price of good and service increase and the economy slows, negatively impacting the standard of living of individual especially those on fixed income. 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 so the researcher accept alternative hypothesis rather reject the alternative hypothesis meaning that inflation have a negative impact on tax revenue.

Export

Null :-export and tax are positive relation ship

ALL; export and tax are negative relation ship

The degree of international trade measured by the share of exports and imports should also Matter for revenue performance. Imports and exports are amenable to tax as they take place at Specified locations. The effect of openness 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) argue revenue may increase provided Openness occurs through ratification of quotas, eliminations of exemptions, reduction in tariff Peaks and improvement in customs procedure. Rodrik (1998) also points out that there is a strong

Positive correlation between trade openness and the size of the government, as societies seem to Demand (and receive) an expanded role for the government in providing social insurance in more

Open economies subject to external risks.

Result above revealed that tax revenue and export have a negative relationship. From a result obtained, it disclosed that holding other factors constant, when level of export increase by 1%, tax revenue will decrease by 0.00011 percent and statistical significant at 1%. Export in billions of birr has a negative significant effect on tax revenue at 1% confidence interval. As per researcher point of view Trade liberalization in Ethiopia can be classified in to export promotion and import substitution. Ethiopian government eliminated restriction on exporter to promote the export.. The exporter is free from tax for promotion in this case tax revenue will be decrease because there is no tariff quota ,duties and others. Exporter use more raw material for export purpose at this time domestic producer for domestic purpose suffers in shortage of raw material and increase input prices these cause inflation in good and service.

Government Expenditure

Null :inflation and tax are positive relation ship

ALL; inflation and tax are negative relation ship

Government spends money toward the supply of good and service that are not provided by the private sector but are important for the nation's defense infrastructure health and welfare benefit Generally, Government has to render enormous range of social activities, which incur heavy expenditure. A part of the expense is sought to be raised through taxation. So, from regression result shows that have negative significant impact on tax revenue at 1% significant level the result depicts the p value of 0.00 and its coefficient result shows negative hen level of government expenditure increase by 1%, tax revenue will decrease by 23.7 percent.

The Government is in the position to restore social justice in the society by way of providing various social services like education, employment, pension, public health, housing, sanitation and the development of weaker sections of the society and others these heave expenditures financed through from tax in Ethiopia non tax revenue are very low .then government must increase tax for finance the expenditure .when tax is increase price of input increase this leads price of good and service increase .because of inflation purchasing power of will decrease ,many company and

private sectors reduce their employment in general because f increase in tax many company ,private sectors ,wholesaler, retailers are out of the market. Then From the result researcher concluded that even if previous researcher didn't done in Ethiopian context ,tax revenue and government expenditure are negative relationship. So, reject null hypothesis but accept ALL hypothesis meaning that government expenditure and tax revenue are a negative relationship .

Unemployment Rate

Null :unemployment and tax are positive relation ship

ALL; unemployment and tax are negative relation ship

Unemployment rate from result shows that has negative significant impact on tax revenue at 1% significant level the result depicts the p value of 0.000 and its coefficient result shows negative when level of unemployment increase by 1%, tax revenue will decrease by18.7percent. this result supports prior expected sign of the coefficient as found by Gladys (2016), and Minyichel(2017). The consequence of unemployment loss of tax revenue, A fall in income results in a fall in both direct and indirect taxes , why direct tax come from the wages, while indirect tax come from product those wages would have been spent on. As result government must either raise level of tax existing wage earners, or reduce government spending from the result, researcher concluded that unemployment rate has negative insignificant effect on tax revenue. As they are not able to spend as much money on goods and service because they haven't any income and inequality in wealth income and increase negative social effects. So that the researcher concluded as unemployment rate affects tax revenue negatively and statically it's significant, since the null hypothesis is to reject at 1% significant level.

4.5. VAR Diagnostic Test

overall short run effect , Autocorrelation Normality and Model stability,

Vector Auto regression model had its own test method of assumptions such as normality, auto-correlation and model stability; after running the vector error correction model the assumption tests are performed; meaning that in order to do the assumption first the regression must be performed; that is why the researcher put the assumption next to the regression output

4.5.1. Overall Short Run-Effect: Granger Causality Wald Tests

In addition to the estimating the short run considering different lag granger causality wald tests was estimated to see the effect of the entire lagged variable together on tax revenue. The granger causality Wald tests shows that there is a short run causality running from independent variable which is disposable income, interest rate, inflation rate, export, government expenditure and unemployment to dependent variable tax revenue at all lagged level.

Table 10. Granger Causality Wald Tests

Equation	Excluded	chi2	Df	Prob > chi2
TAXREV	DINC		0	0.00
TAXREV	INR	1.90E+23	3	0.00
TAXREV	INFR	1.50E+23	1	0.00
TAXREV	EXP		0	0.00
TAXREV	GOEX	3.90E+23	3	0.00
TAXREV	UNER	1.20E+24	3	0.00
TAXREV	ALL	3.10E+24	9	0.00

Source: Model result

The outcome of Granger causality test shows all short run causality running from independent variable which are:- disposable income ,interest rate, inflation rate, export, government expenditure and unemployment to dependent variable tax revenue?

4.5.2. LM Test Of Autocorrelation

Unlike most common other estimation models vector autoregresstion model had its own test method of autocorrelation, linearity and stability. The vector *autoregresstion* model used Lagrange-Multiplier Test to identify the existence of autocorrelation; accordingly the interpretation is made through observing the p-value; if the p-value is significant it implies that there is auto-

correlation problem; however, if the p-value is insignificant or less than five percent it means that there is no the problem of autocorrelation. Accordingly, as observed in the table below the p values is greater than five percent and hence the data is free from autocorrelation problem.

Table. 11. Durbin's Alternative Test for Autocorrelation

Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
-72266.6	90342.75	-0.8	0.434	-262070	117536.4

4.5.3. Jarque-Bera Test of normality

Brooks (2008) has stated that test for normality assumption is required in order to conducts single or multiple hypothesis tests about the model variables. Hence, to conduct diagnostic test for normality, the study has opted for the most common test of Jarque-Bera and conducted the test accordingly. interpretation of the test is same as autocorrelation meaning that the interpretation is done through observing the p-values. Accordingly, all of the variables had p-values greater than five percent. Therefore, the dependent and independent variables had a linear relationship which helps to run the regression.

Null;;residuals are not normally distrusted

All; residuals are normally distributed

Reject null hypothesize rather accept null hypothesis meaning accept alternative hypothesize because the probability value of all variables are greater than 5%.or the residuals are normality distributed.

Table 12. Jarque-Bera Test Of Normality

Equation	chi2	Df	Prob > chi2
TAXREV	0.781	2	0.67688
DINC	2.09	2	0.35174
INR	0.835	2	0.65878
INFR	3.444	2	0.1787
EXP	2.298	2	0.31696
GOEX	1.554	2	0.45969
UNER	0.54	2	0.76336
ALL	11.542	14	0.64306

4.5.4. Stability Test

Table 13 stability test

Eigenvalue	Modulus
.1413721 + .8390772i	0.850903
.1413721 - .8390772i	0.850903
.7489814 + .2606661i	0.793045
.7489814 - .2606661i	0.793045
-.2301572 + .7339941i	0.769233
-.2301572 - .7339941i	0.769233
-.4535047 + .5680815i	0.7269
-.4535047 - .5680815i	0.7269
-.6905385 + .1870764i	0.715431
-.6905385 - .1870764i	0.715431
-0.6692178	0.669218
.4499143 + .4561026i	0.640666
.4499143 - .4561026i	0.640666
0.2900218	0.290022

All the eigen value lies inside the unit circle VAR satisfy stability condition.

4.6. Summary of Findings

From the above discussion, the author as stated the following summarized finding: those are;- Disposal income (actual personal income) has highly positive relationship with tax revenue in Ethiopia and this lead to increment of tax revenue collection for the country. It has been supported by different scholars as it has such relationship

as the above finding revealed, tax revenue and interest rate has positive relationship in Ethiopian. This is because the rise in interest rate people encourage to save Every person getting income from interest on deposits shall pay tax at the rate of 5%. The payers are required to withhold the tax and account to the Tax Authority.

the finding shows that tax revenue and inflation has negative relationship in Ethiopian. This is because the rise in price of goods and service reduce the purchasing power of each unit of currency can buy, rise inflation has an insidious. Input price are higher, consumer can purchase fewer good, the revenue and profit decline and the economy slows, negatively impacting the standard of living of individual especially those on fixed income. 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. As a result, tax revenue collection decrease as inflation increased in Ethiopia.

In the other hand from the above finding tax revenue and export had a negative relationship . Ethiopian government eliminated restriction on exporter to promote the export.. The exporter is free from tax for promotion in this case tax revenue will be decrease because there is no tariff quota, duties and others. exporter use more raw material and inputs for export purpose at this time domestic producer for domestic purpose suffers in shortage of raw material and increase input prices these cause inflation in good and service .generally inflation reduce tax revenue.

The finding revealed also tax revenue and government expenditure has a negative relationship. Government has to render enormous range of social activities, which incur heavy expenditure. A part of the expense is sought to be raised through taxation when rising tax price of input rise and also price of good and service increase and this leads inflation and purchasing power of a society will decrease.

The finding also explains tax revenue and unemployment has a negative relationship**.** The consequence of unemployment loss of tax revenue, A fall in income results in a fall in both direct

and indirect taxes As they are not able to spend as much money on goods and service because they haven't any income and inequality in wealth income and increase negative social effects. So unemployment rate affects tax revenue negatively and statically

CHAPTER FIVE

CONCLUSION AND RECOMMENDATION

5.1.Conclusion

. This study was conducted to analyze the factors affecting tax revenue in Ethiopia; in pursuit of analyzing the major objectives explanatory research design were employed. A 25 year time series data were employed ranged from 1994 to 2018 .Based on the discussion and analysis made in chapter four the researcher concluded its findings as follow.

All variables considered as dependent variable called tax revenue in billions of birr and independent variables like disposal income, interest rate, rate of inflation, export, government expenditure, and unemployment rate are explained through descriptive statistics by mean (average value of observations), median, maximum value of observation, minimum value of observation and their respective standard deviations for all variables.

.The necessary tests were performed where all of the variables become stationary at first order difference;. Both long and short run estimation was performed. The co-integration performance indicated that there is a long run association between the variables. The findings of the study revealed that all of the anticipated variables had a short run effect on tax revenue.

The study result showed that Disposable income has a significant positive long run relationship with tax revenue at 5% significance level and this represents a higher per capita income leads to a higher level of development, which ultimately generates a higher capacity to pay taxes.

Whereas inflation has a significant and negative long run relationship with tax revenue at 1% significance level this implies that the increase in cost of living associated with the loss of purchasing power of money, which could ultimately reduce real value of tax collected in Ethiopia. According to Workineh (2016) if there is loss of purchasing power of money, the tax payers put their tax liability aside and began to worry about satisfaction of their daily consumption.

Accordingly, the country inflation rate, export and government expenditure had shown negative effect on tax revenue; however, the variable, disposable income and interest rate had a positive short run effect on tax collection.

Besides, the findings of the study illustrate that tax revenue collection in the Ethiopia faces various challenges. It is identifies in the study that, lack of capacity building and training. Accountability system is not backed up with reward and punishment as well while corruption rampantly hit employee. In addition, performance appraisal and evaluation of the employee is not supported by the actual efficiency and performance of workers.

Moreover, it is found in the study that poor creativity in electronic media transmission to address the necessary message on attractive way, unavailability of publication in English language as well as administration and modernization of webpage is not done on sustainable manner. Fear of decision making in proper period to avoid risks of the adverse consequences of decisions is also another challenge that the office faces. Institutional complain handling and resolution mechanism is found to be unfair and appeals presented by taxpayers are usually discarded without providing solution. Inadequate software application, network connection problem, shortage of supply of cash register machine due to shortage of foreign currency, weak maintenance services for the cash register machine, absence of efficient registration process to get tax identification number at regional offices, are the major challenges.

5.2.Recommendation

Based on the findings of this study the following recommendations were forwarded as an alternative to improve the development of the economy in general and the tax system in particular.

- Many of the services provided by the Government for the general public are mostly meant for the corporate sector -.the Government is in the position to restore social justice in the society by way of providing various social services like education, employment, pension, public health, housing, sanitation and the development of weaker sections of the society. Besides the above, the Government announces heavy subsidies for agriculture and industry. Thus, Government requires more amount of revenue than before. Non-tax revenues are not sufficient to meet the entire expenditures. so, Government, policy maker and all concerned body develop clear forms and instructions, providing points of contact to request and secure information about their duty, and developing educational programs to inform taxpayers. Taxpayers' education and training is very essential in promoting compliance. Taxpayers must receive clear and concise information on what is taxable, how to calculate their tax liabilities and procedures for calculating and paying taxes and why, where and when they pay taxes..
- As indicated in the descriptive statistics tax revenue has remained to be the largest contributor of the total government revenue in Ethiopia but the share of tax revenue to GDP is very low, Therefore, improving the efficiency of tax administration, shall be given due attention by policy makers.
- Ethiopian government perform well in registering high economic development continuously that improve per capita income and life of a citizen which lead to better collection of tax revenue that bring better financing government activities. Since, disposable income and interest rate have been found to affect tax revenue positively and significantly in the long run.
- The rate of unemployment increase , reduced tax revenue this will mean more people will be unemployed thus decrease level of disposable income and at the end also decreases the amount of tax revenue. The government should lobby for

higher employee salaries since this will further contribute to higher tax revenue collection. Policies makers should undertake reduce unemployment by using the following activity; improved geographical mobility, stricter benefit requirements, improves labor, encourage labor intensive industries and employment subsidies.

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APPENDIXCES ONE;

Year	TAXREV	DINC	INR	INFR	EXP	GOEX	UNER
1994	3419.09	166457.00	10.00	6.29	1404172.70	8.87	4.56
1995	3625.04	183361.00	10.00	14.84	2737233.40	9.03	4.85
1996	3758.15	183361.00	10.00	-9.00	2499515.10	9.23	4.84
1997	3986.25	187761.00	7.00	-2.65	3635398.50	9.21	5.13
1998	4234.60	187010.00	6.00	0.10	4019286.50	9.30	5.13
1999	4552.73	196646.00	6.00	10.39	3437259.50	9.59	5.39
2000	5387.47	215543.00	6.00	1.89	3754872.40	9.77	4.98
2001	6149.09	235330.00	6.00	-10.77	3378925.70	9.66	4.65
2002	6517.21	240245.00	3.00	-1.22	3373308.40	9.78	4.46
2003	6749.37	241141.00	3.00	17.77	4137208.30	9.93	4.24
2004	8856.52	269034.00	3.00	2.38	5178464.80	9.93	3.80
2005	9735.27	311823.00	3.00	10.75	7331257.60	10.12	3.57
2006	11261.24	343436.00	3.00	10.82	8685375.80	10.29	3.31
2007	14200.18	386709.00	3.00	15.10	10457615.00	10.48	3.17
2008	19275.80	424483.00	4.00	55.24	13643976.00	10.76	3.13
2009	23583.26	458492.00	4.00	2.71	15217753.00	10.96	3.50
2010	35708.47	526486.00	4.00	7.32	26115306.00	11.18	3.58
2011	50816.45	588220.00	5.00	38.04	44525565.00	11.45	3.45
2012	70745.93	623415.00	5.00	20.81	54494767.00	11.73	3.34
2013	84414.41	684096.00	5.00	7.39	56123592.00	11.94	3.44
2014	106798.26	748896.00	5.00	8.46	62243000.00	12.13	3.21
2015	128320.93	824682.00	5.00	10.45	59860381.00	12.35	3.08

2016	144348.22	1718939.00	5.00	7.50	59725753.00	12.52	2.97
2017	160179.62	1850776.00	5.00	8.36	63685744.00	12.70	2.77
2018	176102.82	1977164.00	7.00	16.77	72712995.00	12.78	2.78

Source: Ethiopia revenue and custom authority, central statistical agency, National Bank of Ethiopia, Ministry of Finance and Economic Development and World Bank.

APPENDIXCES TWO: Diagnostic Test Results

Statinarity

Unit root

Dickey-Fuller test for unit root — Number of obs = 23

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
		Z(t) has t-distribution		
Z(t)	-2.396	-2.518	-1.721	-1.323

p-value for Z(t) = 0.0130

D2.TAXREV	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
TAXREV LD.	-.4390305	.1832183	-2.40	0.026	-.8200538	-.0580073
_cons	3656.268	2066.739	1.77	0.091	-641.7499	7954.287

Dickey-Fuller test for unit root — Number of obs = 23

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
		Z(t) has t-distribution		
Z(t)	-4.002	-2.518	-1.721	-1.323

p-value for Z(t) = 0.0003

D2.DINC	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
DINC LD.	-.8648767	.2160849	-4.00	0.001	-1.31425	-.4155036
_cons	68096.19	41530.81	1.64	0.116	-18271.87	154464.2

```
. dfuller d.DINC, drift regress lags(0)
```

Dickey-Fuller test for unit root — Number of obs = 23

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
		Z(t) has t-distribution		
Z(t)	-4.002	-2.518	-1.721	-1.323

Dickey-Fuller test for unit root — Number of obs = 23

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
		Z(t) has t-distribution		
Z(t)	-4.144	-2.518	-1.721	-1.323

p-value for Z(t) = 0.0002

D2.INR	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
INR LD.	-1.008721	.2433995	-4.14	0.000	-1.514898	-.5025439
_cons	.130814	.1965629	0.67	0.513	-.2779609	.5395888

Dickey-Fuller test for unit root — Number of obs = 23

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
		Z(t) has t-distribution		
Z(t)	-6.942	-2.518	-1.721	-1.323

p-value for Z(t) = 0.0000

D2.INFR	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
INFR LD.	-1.392834	.2006387	-6.94	0.000	-1.810085	-.9755834
_cons	.1192681	3.65483	0.03	0.974	-7.481367	7.719903

Dickey-Fuller test for unit root — Number of obs = 23

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
		Z(t) has t-distribution		
Z(t)	-2.239	-2.518	-1.721	-1.323

p-value for Z(t) = 0.0181

D2.EXP	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
EXP LD.	-.4194243	.1873613	-2.24	0.036	-.8090635	-.0297851
_cons	1470287	993203	1.48	0.154	-595192	3535765

Dickey-Fuller test for unit root — Number of obs = 23

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
		Z(t) has t-distribution		
Z(t)	-3.704	-2.518	-1.721	-1.323

p-value for Z(t) = 0.0007

D2.GOEX	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
GOEX LD.	-.8068313	.2178528	-3.70	0.001	-1.259881	-.3537816
_cons	.1308767	.0418482	3.13	0.005	.0438487	.2179047

Dickey-Fuller test for unit root — Number of obs = 23

	Test Statistic	1% Critical Value	5% Critical Value	10% Critical Value
		Z(t) has t-distribution		
Z(t)	-3.636	-2.518	-1.721	-1.323

p-value for Z(t) = 0.0008

D2.UNER	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
UNER LD.	-.7093136	.1950748	-3.64	0.002	-1.114994	-.3036332
_cons	-.0671525	.0451755	-1.49	0.152	-.1611002	.0267951

Co-integration

Johansen tests for cointegration

Trend: constant — Number of obs = 22
Sample: 1997 - 2018 — Lags = 2

maximum rank	parms	LL	eigenvalue	trace statistic	5% critical value
0	56	86.151356	.	243.2913	124.24
1	69	149.23687	0.99677	117.1203	94.15
2	80	170.58196	0.85636	74.4301	68.52
3	89	187.75898	0.79019	40.0761*	47.21
4	96	198.8841	0.63628	17.8258	29.68
5	101	202.5272	0.28193	10.5396	15.41
6	104	205.81214	0.25817	3.9698	3.76
7	105	207.79702	0.16510		

Lag Selection

```
. varsoc TAXREV DINC INR INFR  EXP GOEX UNER
```

Selection-order criteria
Sample: 1998 - 2018 — Number of obs = 21

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-999.524				1.0e+33	95.8595	95.935	96.2076
1	-860.268	278.51	49	0.000	2.5e+29	87.2636	87.8681	90.049
2	-364.114	992.31	49	0.000	7.6e+11*	44.6775	45.811	49.9001
3	3443.05	7614.3*	49	0.000	.	-313.91*	-312.323*	-306.598*
4	3354.35	-177.4	49	.	.	-305.462	-303.875	-298.151

Endogenous: TAXREV DINC INR INFR EXP GOEX UNER
Exogenous: _cons

.

Outcome of VAR model

	Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
TAXREV						
TAXREV						
L1.	9.040577	1.69e-09	5.4e+09	0.000	9.040577	9.040577
L2.	6.275703	9.31e-10	6.7e+09	0.000	6.275703	6.275703
L3.	-8.268544	1.28e-09	-6.5e+09	0.000	-8.268544	-8.268544
DINC						
L1.	.1933453	2.41e-11	8.0e+09	0.000	.1933453	.1933453
L2.	-.4030243	6.82e-11	-5.9e+09	0.000	-.4030243	-.4030243
L3.	1.157628	1.86e-10	6.2e+09	0.000	1.157628	1.157628
INR						
L1.	9517.913	1.85e-06	5.2e+09	0.000	9517.913	9517.913
L2.	3385.016	8.41e-07	4.0e+09	0.000	3385.016	3385.016
L3.	-5344.11	1.12e-06	-4.8e+09	0.000	-5344.11	-5344.11
INFR						
L1.	-779.1877	1.36e-07	-5.7e+09	0.000	-779.1877	-779.1877
L2.	-1283.109	2.38e-07	-5.4e+09	0.000	-1283.109	-1283.109
L3.	-539.7675	1.07e-07	-5.1e+09	0.000	-539.7675	-539.7675
EXP						
L1.	-.011034	2.10e-12	-5.2e+09	0.000	-.011034	-.011034
L2.	.0008723	1.53e-13	5.7e+09	0.000	.0008723	.0008723
L3.	-.0130048	2.33e-12	-5.6e+09	0.000	-.0130048	-.0130048
GOEX						
L1.	140217.6	.0000262	5.4e+09	0.000	140217.6	140217.6
L2.	-76096.65	.0000146	-5.2e+09	0.000	-76096.65	-76096.65
L3.	-112217	.0000207	-5.4e+09	0.000	-112217	-112217
UNER						
L1.	-178648.3	.000034	-5.3e+09	0.000	-178648.3	-178648.3
L2.	86588.33	9.80e-06	8.8e+09	0.000	86588.33	86588.33
L3.	127144.9	.0000269	4.7e+09	0.000	127144.9	127144.9
_cons	194118.2	.0000461	4.2e+09	0.000	194118.2	194118.2

VAR diagonestic test

Over all short run casauality

vargranger

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
TAXREV	DINC	56.794	2	0.000
TAXREV	INR	3.176	2	0.204
TAXREV	INFR	4.2906	2	0.117
TAXREV	EXP	76.047	2	0.000
TAXREV	GOEX	6.5876	2	0.037
TAXREV	UNER	9.3079	2	0.010
TAXREV	ALL	198.95	12	0.000
DINC	TAXREV	162.59	2	0.000
DINC	INR	1.0649	2	0.587
DINC	INFR	.48861	2	0.783
DINC	EXP	5.7614	2	0.056
DINC	GOEX	2.7273	2	0.256
DINC	UNER	.35748	2	0.836
DINC	ALL	377.01	12	0.000
INR	TAXREV	1.724	2	0.422
INR	DINC	1.6541	2	0.437
INR	INFR	.33027	2	0.848
INR	EXP	1.9591	2	0.375
INR	GOEX	6.6373	2	0.036
INR	UNER	2.935	2	0.231
INR	ALL	36.575	12	0.000

INFR	TAXREV	2.6384	2	0.267
INFR	DINC	1.4809	2	0.477
INFR	INR	.7741	2	0.679
INFR	EXP	2.3884	2	0.303
INFR	GOEX	1.9906	2	0.370
INFR	UNER	16.695	2	0.000
INFR	ALL	60.076	12	0.000
EXP	TAXREV	7.0128	2	0.030
EXP	DINC	8.2431	2	0.016
EXP	INR	5.9563	2	0.051
EXP	INFR	25.196	2	0.000
EXP	GOEX	19.809	2	0.000
EXP	UNER	26.188	2	0.000
EXP	ALL	138.24	12	0.000
GOEX	TAXREV	.35294	2	0.838
GOEX	DINC	1.7113	2	0.425
GOEX	INR	6.9165	2	0.031
GOEX	INFR	.9264	2	0.629
GOEX	EXP	7.2517	2	0.027
GOEX	UNER	23.627	2	0.000
GOEX	ALL	39.819	12	0.000
UNER	TAXREV	.03487	2	0.983
UNER	DINC	.99985	2	0.607
UNER	INR	6.5667	2	0.038
UNER	INFR	4.112	2	0.128
UNER	EXP	.15796	2	0.924
UNER	GOEX	.5391	2	0.764
UNER	ALL	21.913	12	0.039

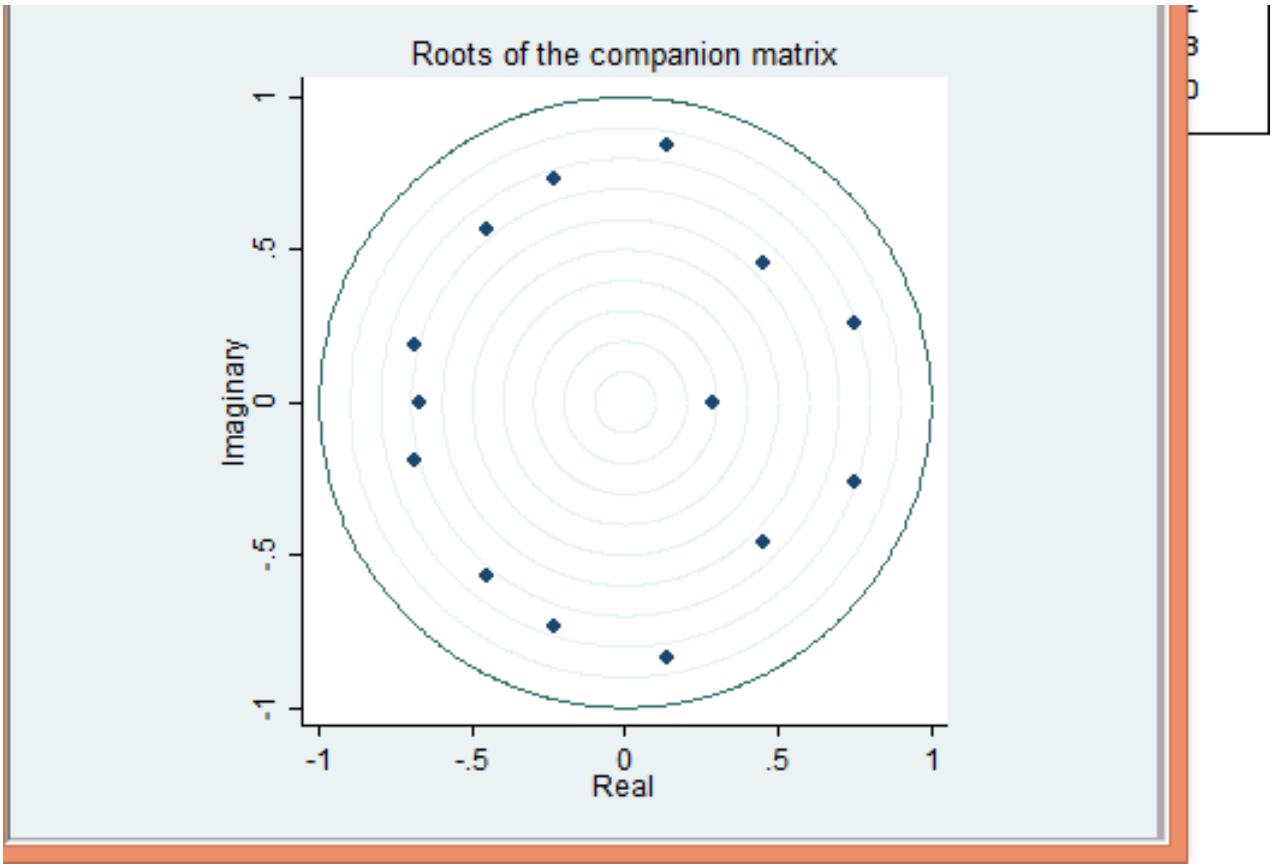
autocorrelation

Durbin's alternative test for autocorrelation		
lags(p)	chi2 df	Prob > chi2
1	1.073 1	0.3002
H0: no serial correlation		

Normality

Equation	chi2	df	Prob > chi2
DlogTaxRevenue	0.900	2	0.63747
DlogDispIncome	58.618	2	0.00000
DlogInterest	1.806	2	0.40531
DLogInflation	0.503	2	0.77758
DLogExport	0.632	2	0.72900
DLogGovExpend	6.727	2	0.03462
DLogUnemplo	1.436	2	0.48768
ALL	70.623	14	0.00000

Stability condition



Eigenvalue stability condition

Eigenvalue	Modulus
.1413721 + .8390772*i*	.850903
.1413721 - .8390772*i*	.850903
.7489814 + .2606661*i*	.793045
.7489814 - .2606661*i*	.793045
-.2301572 + .7339941*i*	.769233
-.2301572 - .7339941*i*	.769233
-.4535047 + .5680815*i*	.7269
-.4535047 - .5680815*i*	.7269
-.6905385 + .1870764*i*	.715431
-.6905385 - .1870764*i*	.715431
-.6692178	.669218
.4499143 + .4561026*i*	.640666
.4499143 - .4561026*i*	.640666
.2900218	.290022

All the eigenvalues lie inside the unit circle.
VAR satisfies stability condition.

Out Come of VCEM

DTAXREV		Coef.	Std. Err.	z	P>|z|	[95% Conf.	Interval]
	_ce1 L1.	-1.271976	1.524528	-0.83	0.404	-4.259996	1.716043
	_ce2 L1	0.2332363	0.3018585	0.77	0.44	-0.3583955	0.824868
	_ce3 L1.	1727.891	1941.921	0.89	0.374	-2078.204	5533.986
	_ce4 | L1.	362.116	785.9641	0.46	0.645	-1178.345	1902.577
	TAXREV						
	LD.	-0.160311	0.3751895	-0.43	0.669	-0.8956689	0.5750469
	L2D.	0.4247589	0.7167896	0.59	0.553	-0.9801228	1.829641
	DINC						
	LD.	-0.2083177	0.3300466	-0.63	0.528	-0.8551973	0.4385618
	L2D.	-0.2210849	0.3080165	-0.72	0.473	-0.8247862	0.3826163
	INR						
	LD.	-1475.004	2653.495	-0.56	0.578	-6675.759	3725.75
	L2D.	-2677.542	2621.44	-1.02	0.307	-7815.47	2460.386
	INFR						
	LD.	6696.458	19395.05	0.35	0.73	-31317.14	44710.06
	L2D.	1179.318	7223.601	0.16	0.87	-12978.68	15337.32
	EXP						
	LD.	0.0000883	0.0255251	0	0.997	-0.0499399	0.0501164
	L2D.	0.0426645	0.0867644	0.49	0.623	-0.1273906	0.2127197
	GOEX						
	LD.	-483573.2	1390629	-0.35	0.728	-3209156	2242009
	L2D.	-53972.85	658094.6	-0.08	0.935	-1343815	1235869
	UNER						
	LD.	284954.5	1017113	0.28	0.779	-1708551	2278460
	L2D.	719671.5	973259.1	0.74	0.46	-1187881	2627224