Effect of Fiscal Policy on Unemployment in Ethiopia

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Abstract
Over the years unemployment has increased tremendously in Ethiopia. It is a social and economic problem that has eaten deep into the Ethiopian economy. The main objective of this study was to examine the short term and long-term effects of Government spending and Tax revenue on unemployment in Ethiopia. Annual time-series data for the period of 1990-2021 were employed. The ARDL approach to co integration is applied to investigate the long run and short-run determinants of unemployment. The results of unit root suggested that both variables in the model were stationary after first difference. The results from regression analysis revealed that Government expenditure has the negative impact on Unemployment of Ethiopia. Co-integration technique was employed to establish the relationship between Fiscal policy and Unemployment. The results of co-integration test using ARDL test showed that over the period of 1990-2021 their Fiscal policy and Unemployment a negative and statistically significant short-term relationship was found. Furthermore, pairwise Granger causality test as well applied in order to find out the directional causation between Tax rate and Unemployment rate. The result indicates unidirectional causality running from unemployment to Tax and government expenditure. The concerned body should increase government spending. Therefore, the author recommends the need to increase expenditure on in productive ventures that are labor intensive which would increase employment.
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1. INTRODUCTION
The high unemployment rates at present experienced by many economies indicate both cyclical conditions and inherent weaknesses in labour market institutes and fiscal policies. Unemployment negatively impacts on government's ability to generate income and also tends to reduce economic activity. Higher unemployment follows that less people are paying taxes to the government to help it function. Governments may use fiscal policy instruments: taxation and government expenditure to achieve macroeconomic objectives such as sustained economic growth. (Cottarelli, 2012)

One of the goals of a modern government is to mitigate unemployment and make the environment conducive for investors to invest in other to create job and ensure price stability in the economy through operative and appropriate employment of fiscal policies. Fiscal policy is the government's management of the economy through the handling of its income and spending power to represent some desired macroeconomic objectives amongst which are price stability, minimal unemployment rate and economic growth (Ozurumba,2012). Fiscal policy encompasses the use of government spending, taxation and borrowing to affect the pattern of economic activities and also the level and growth of aggregate demand, output and employment. Fiscal policy entails government's management of the economy through the manipulation of its income and spending power to achieve certain desired macroeconomic objectives amongst which is economic growth (Medee and Nembee, 2011). Olawunmi and Tajudeen (2007) that fiscal policy has conventionally been associated with the use of taxation and public expenditure to influence the level of economic activities.

Over the years unemployment has increased tremendously in Ethiopia. It is a social and economic problem that has eaten deep into the Ethiopian economy. Unemployment denotes to the condition and level of joblessness within an economy, and is measured in terms of the unemployment rate, which is the quantity of unemployed persons who are eager and able to work divided by the total civilian labor force. Henceforth, unemployment is the condition of not having a job, often referred to as being "jobless", or unemployed. The terms unemployment and unemployed are sometimes used to refer to other inputs to production that are not being fully used, for example, unemployed capital goods.

The idea of fiscal policy can be traced to the work of Keynes who planned the idea of fiscal policy as a measure to stimulate growth during the great depression of the 1930's. Alex and Ebieri (2014) noted that government involvement in the economy through fiscal policy has been to operate the receipt and expenditure sides of its budget in order to achieve certain national objectives. Fiscal policy is one of the major macroeconomic policies in which a government uses its spending and taxation powers to monitor and influence a nation's economy. The way government uses its spending and taxation power characterises the type of the government. Most governments use this power to promote stable and sustainable growth while pursuing its income redistribution effect to reduce poverty. Fiscal policy consequently plays a significant role in influencing the behaviour of the economy. The choice of the government fiscal policy can have both short- and long-term

influences.

Fiscal policy is powerful instrument of bringing all-encompassing growth. A study conducted by UNDP on Income Inequality Trends in sub-Saharan Africa asserts that fiscal policy is an important tool that governments throughout the world use to promote macroeconomic stability, allocate resources to priority projects and activities, provide public goods to correct market failures, and redistribute incomes and wealth to the marginalized and underprivileged. The study further noted that if well-formulated and implemented, fiscal policy is crucial for driving economic growth, social stability and national development (UNDP, 2017).

Fiscal policy is one of the basic instruments being used for stabilizing and to bring about growth in the economy in a desired way through enforcing monitoring mechanisms. Government expenditure embodies one of the significant components of fiscal policy tools for achieving numerous objectives of developing countries. Consistent with this, one of the aims of governments in developing nations is to take about economic growth. As to the Ethiopian Ministry of Finance and Economic Development Annual Report (2010/11), the utmost important development determination of Ethiopia is to decrease poverty in a comparatively short period of time. This can be accomplished with employment of broad-based development policies that would not only boost economic growth but would also be ruled by the principles of ensuring equitable distribution of the benefits from such growth. Once more, using government expenditure as a instrument to increase economic growth and improve the life of the population, Ethiopia has lay down both medium and long-term plans. Its medium-term plan is to achieve the Millennium Development Goals (MDGs) at the end of the implementation of the five-year plan the Growth and Transformation Plan (GTP).

The importance of fiscal policy in impacting the dynamics of an economy was rebounded by Arnelyn.et.al (2014) who emphasized that; in the short term, counter-cyclical fiscal expansion can help support aggregate demand and growth during cyclical downturns, conversely, fiscal contraction can cool down an economy that is growing at an unsustainable leap and thus faces the risk of overheating. In the medium and long term, fiscal policy also plays a significant role in the economy. Fiscal policy among many other policies is one policy framework used by governments to regulate their spending and taxation. developed and developing countries government adopt the framework of fiscal policy as a means to correct their expenditure levels and tax rates to monitor and encourage their countries' economies. Thus, Fiscal policy is a management instrument of a government with reference to the country's economy (Anayochukwu, 2012)

Several researchers, scholars, and theorists has always come up with contradictory results and conclusions on the role of fiscal policy on unemployment creating an endless debate. (Keynes, 1936; Mahmood & Khalid, 2013; McDonald and Solow, 1981; Murwirachena, Choga & Maredza, 2013). The results of these studies are as different as there are scholars. These differences but, were rooted in the context differences of the country or countries researched, methods used and the data employed. Some empirical studies from industrialized nations have contributed to the argument on the effect of government expenditure on unemployment. studies comprise Fatas and Mihov (1998), Feldmann (2006), Abrams (1999), Bruckner and Pappa (2011), and Genius (2011) among others. Fatas and Mihov (1998) researcher used quarterly data and employed Vector Autoregressive (VAR) model to study the dynamic impact of fiscal policy on employment implied by a large class of general equilibrium models in the USA for the period between 1960 to 1996 and revealed that positive impact in government spending is followed by strong and insistent rises in employment. This result apparently is well-suited with Keynesian theory of unemployment which proposes that an expansionary fiscal policy framework stimulates aggregate demand leading to an increase in employment.

The effects of government spending on unemployment still remain vague; there exists some empirical evidence which shows that fiscal stimulus improves employment (see Monacelli et al., 2010) while others provide a contrasting view in their research that fiscal stimulus rather worsens unemployment (Bruckner and Pappa, 2012). In contrast, Bruckner and Pappa (2010,2012) in their study on how fiscal expansions affect unemployment used structural VAR to empirically show that actually not only that fiscal policy is not the best tool to reducing unemployment, but that it can also go in contradiction of the original scope and intentions. In the work of Genius, *et al.* (2013), the impact of fiscal policy on unemployment in South Africa was examined using annual time series data for the period 1980 to 2010 with VECM to determine the effects of fiscal policy aggregates on unemployment in South Africa. The study found that government recurrent expenditure and tax have a positive impact on unemployment while government capital expenditure negatively affects unemployment. Baker (2007), specified that in spite of government involvement in shaping the economy of a country using fiscal policy, a high rate of unemployment still occur. Unemployment influences negatively on the government's ability to generate income, and it also decreases economic activity. Huge amount of government revenue is generated from taxes of all forms, and so if less people are employed, then the government's revenue that could be used to boost economic activities decreases because fewer people would be paying taxes. Since the employment of available human resources is energetic to economic growth, it is thus, the aim of every government to implement policies that would reduce unemployment rates. Mostly, the creation of jobs from governments occurs via government

spending in the provision of social and economic infrastructural amenities. (Kelechukwu and Amadi (2016)

There are a few related studies conducted in Ethiopia. For instance, Teshome (2006) studied the impact of government spending on economic growth and came up with the conclusion that government spending does not have significant implication to explain growth in the short-run. Daniel (2012) examined dynamic effects of fiscal policy shocks on some macroeconomic variables excluding debt feedback rule. He Analyzed the impulse responses of GDP, inflation and interest to the shocks of tax revenue and government expenditure. He revealed that tax shocks had a positive impact on output but little impact on inflation, whereas government spending shocks had an expansionary effect on output and have an inflationary impact in the short run.

Mathewos (2015) examined the macroeconomic effects of fiscal policy shocks in Ethiopia using the Structural Vector Auto Regressive model (SVAR) by considering the feedback effects of public debt. His result confirms the argument that ignoring the reactions of fiscal and macro variables to the debt level produces incorrect estimates of the effects of fiscal policy in Ethiopia. He concluded that, shocks in government spending have an expansionary effect on output; lead to quick rise in prices; produce a small varied effect on the cost of debt; decrease nominal exchange rate in the long run and make debt-to-GDP ratio increase. Alternatively, shocks in revenue have a less clear cut, and small positive effect on output; a temporary price stabilization effect; no meaningful effect on the cost of debt; and less stabilization effect on debt- to-GDP ratio.

Despite the government's tremendous effort to influence economic behavior using an expansionary fiscal policy framework, unemployment has remained a challenging phenomenon in Ethiopia. Various governments worldwide strongly use expansionary fiscal policy to increase economic growth through increasing aggregate demand to ensure full employment. Evidence from Ethiopia shows although there has been sustained increase in government expenditure and tax revenue over the period under consideration, total unemployment rate remained on an upward trend. It is also obvious that young person's working age population is increasing overtime. Therefore, this offers some indication that government expenditure and taxation may not be successively affecting unemployment in Ethiopia. Hence the importance of assessing the effectiveness of Ethiopia's fiscal policy on unemployment. The existing literature reveals a gap of knowledge in this area; little effort has been made to study the effects of fiscal policy in Ethiopia, which was the central of this study determined to discuss the effect of Ethiopia's fiscal policy on unemployment. Over the years, the Ethiopia Government had adopted various fiscal policy measures to reduce the problem of unemployment, but still the problem has been on the increase. The motivation behind this study stems from the fact that at a time when the Ethiopia economy is faced with growing unemployment, a search for solution via fiscal policy in line with the Keynesian thought becomes a source of interest. To do this, the study intends to answer the research questions of: what effects doe's fiscal policy on unemployment in Ethiopia?

The present study is aimed at further examination of how fiscal policy can contribute in reducing unemployment in Ethiopia. In the Ethiopian case, to best of my knowledge not much has been done in empirical studies to capture the effect of fiscal policy shocks on unemployment. These study aims to fill these gaps.

2.0. Review of Related literature

The macroeconomic relationship between fiscal policy and economic growth has long fascinated economists. Regrettably, analyses of that relationship have frustrated empiricists for almost as long. One root of that frustration is the array of possible policy indicators" (Fu, *et al., 2003*). A large number of studies have been carried out to examine the impact of fiscal policy variables on economic growth, investment, consumption, inflation, exchange rate, external deficit and other macroeconomic activities Claus, *et al*. (2006) and Kukk (2006). Government spending, tax revenues and budget deficits as fiscal policy variables have been used by these authors and found different responses of macroeconomic activities to fiscal innovations. According to Höoppner (2003), Claus, *et al*. (2006), Esau (2006), Heppke-Falk, *et al*. (2006) and Castro, *et al*. (2006), shocks to government spending positively affect GDP growth rate, whereas shocks to taxes inversely affect GDP growth rate. Furthermore, GDP growth rate responds negatively to budget deficit in the long run Balassa Bose, *et al*. (2003); Amanja and Morrissey (2005); Romero de Avila and Strauch (2007) have used fiscal policy variables in the growth equations and have found their significant contribution. The rising budget deficit has been considered as one of the main constraints to economic growth [Iqbal and Zahid (1998); Fischer (1993); Easterly and Rebelo (1992); Levine and Zervos (1993); Barro (1991); Mwebaze (2002) and Balassa (1988)]. From the relevant literature it is clear that fiscal policy affects economic growth. However, the sign and magnitude of the effects of different tools of fiscal policy are ambiguous.

Budget deficit in growth equations and have Revealed that budget deficit is one the significant variables affect in economic growth Iqbal (1994, 1995, 1998.).As far as theoretical work regarding the relationship between fiscal policy and economic growth is concerned, the most notable work has been done by Trevala (2005) and Blinder and Solow (1972). Tervala (2005) argued that fiscal growth raises the output of non-traded goods and crowds out private consumption of non-traded goods. However, Blinder and Solow (1972) argued that in the

simplified IS–LM framework the long run sign of the pure fiscal multiplier is undermined a priori, fiscal policy only acts perversely in unstable system.

Fiscal policy is concerned on government spending and taxation which is linked to government expenditure plan and taxation structure of an economy (Bernanke et al., 2001 and Black et al., 2013). Studying the impact of fiscal policy on once country economy is very decisive to have a sound economic environment. Since designing proper fiscal policy enables the government to attain economic objectives like reducing unemployment, price stabilization, income distribution, and economic growth.

Changes in the level and composition of taxation and government spending can affect macroeconomic variables, including: aggregate demand and the level of economic activity, saving and investment income distribution ,allocation of resources. Fiscal policy can be distinguished from monetary policy, in that fiscal policy deals with taxation and government spending and is often administered by a government department; while monetary policy deals with the money supply, interest rates and is often administered by a country's central bank. Both fiscal and monetary policies influence a country's economic performance. An important role for fiscal policy is the mitigation of unemployment and stabilization of the economy. Despite doubt from some branches of the economics profession, politicians and policy makers tend to be optimistic about the potential fiscal policy has in this regard. Around the world, countries facing downturns continue to pursue a variety of fiscal strategies, ranging from tax cuts to public works projects. Nonetheless, politicians' willingness to use fiscal policy to aggressively fight unemployment is tempered by high levels of debt. The main political barrier to deficit-financed tax cuts and public spending increases appears to be concern about the long-term burden of high debt. This extensive practical experience with fiscal policy raises a number of basic positive public finance questions. In general, how do employment concerns impact the setting of taxes and public spending? When will government employ fiscal stimulus plans? What determines the size of these plans and how does this depend upon the economy's debt position? What will be the mix of tax cuts and public spending increases in stimulus plans? What will be the overall effectiveness of fiscal policy in terms of reducing unemployment? The economic model underlying the theory in which unemployment can arise but can be mitigated by tax cuts and public spending increases. Such policies are fiscally costly, but can be financed by issuing debt .Balassa Bose, *et al.* (2003).

The political model underlying the theory follows the approach in our previous work (Battaglini and Coate 2007, 2008). It features a public and private sector. The private sector consists of entrepreneurs who hire workers to produce a private good. The public sector hires workers to produce a public good. Public production is financed by a tax on the private sector. The government can also borrow and lend in the bond market. The private sector is affected by exogenous shocks which impact entrepreneurs' demand for labor. Unemployment can arise because of a downwardly rigid wage. In the presence of unemployment, reducing taxes increases private sector hiring, while increasing public production creates public sector jobs. Thus, tax cuts and increases in public production reduce unemployment. However, both actions are costly for the government.

This means that stimulus plans do not achieve the maximum possible reduction in unemployment and that the multiplier impacts of tax cuts and public production increases are not equalized. In normal times, when the private sector is not experiencing negative shocks, the government reduces debt until it reaches a floor level. At all times, the private–public output mix is distorted relative to the first best. Unemployment is weakly increasing in the government's debt level, strictly so when the private sector experiences negative shocks. The theory has two unambiguous qualitative implications. The first is that the dynamic pattern of debt is countercyclical. This implication also emerges from other theories of fiscal policy, so there is nothing particularly distinctive about it. Some empirical support for this prediction already exists (see, for example, Barro1986). The second implication is that, ceteris paribus, the larger an economy's pre- existing debt level, the higher will be its unemployment rate. This implication should be distinguished from the positive correlation between contemporaneous debt and unemployment that arises from the fact that both are countercyclical. The underlying mechanism is that an economy's pre-existing debt level constrains its stimulus efforts. We are not aware of any other theoretical work that links pre-existing debt and unemployment in this way and so we believe this to be a novel prediction.

Keynesian Theories According to Douglas Mackenzie (2008), Keynesian economics has reference to a set of theoretical explanations for persistent unemployment and to specific governmental employment policies. The general notion behind Keynesian economics is that persistent unemployment derives from decreases in total private sector spending. According to Keynesian economists, the government can alleviate unemployment by increasing the total amount of spending in the economy. Keynes assumes that causality runs from public expenditure to economic growth in times of recessions. The Keynesian theory postulates that expansion of government spending accelerates economic growth. Regarding the link between public expenditure and economic growth, the theory of Keynesian macro economy assumed that high public spending leads to increase aggregate demand and in turn, increase the growth of the economy. On the other hand, the theory of Wagner inclined towards the opposite view. The second theory argues that an increase in the national income cause more public spending (Mwafaq M. Dandan 2011). To Keynes, public expenditure is an exogenous factor and a policy

instrument for increasing national income. In contrast, Wagner's law proposes that there is a long-run tendency for public expenditure to grow relative to some national income aggregates such as the Gross Domestic Product (GDP). On the other hand, according to (Masaviru 2012 p.61)

The Wiseman and Peacock's hypothesis says that there is usually a considerable increase in revenue to governments due to the economic developments over the years, thereby leading to an increase in public expenditure. Wiseman & Peacock (1961) argue that spending increases when governments spend to meet demands made by the population regarding various services. Furthermore, during wars, tax rates are increased by the government to generate more funds to meet the increase in defense expenditure; such an increase in revenue, therefore, gives rise to government expenditure. 2.2. Empirical Literature When we see empirical studies concerning the relationship between composition of Public expenditure and economic growth, most results are still mixed. There is no universal agreement on which compositions of public expenditure directly promote economic growth. Scholars have examined the relationship between government expenditure on economic growth. Teshome Ketema (2006) examined the impact of government spending on economic growth in the case of Ethiopia for the period 1960/61-2003/04. The author used econometric analysis to see the impact of various compositions of government spending on the growth of real GDP using Johanson Maximum Likelihood Estimation procedure. He found that only expenditure on human capital has a long-run significant positive impact. Productive government expenditure shows the negative and insignificant impact on growth of real GDP, which indicates the inefficiency and poor quality of public expenditure. He found that in the short run, all compositions of government expenditure do not have significant meaning in explaining economic growth.

Abu Nurudeen and Abdullahi Usman (2010) used disaggregated analysis to investigate the effect of government expenditure on economic growth In Nigeria, for the period 1970-2008. The author explored that total recurrent expenditures, total capital, and expenditure on education have negative effect on economic growth. However, increasing government expenditure in the areas of transport, communication and health will results with economic growth. In addition to the above, Adewara Sunday Olabisi and Oloni, Elizabeth Funlayo (2012) empirically analyzed the composition of public expenditure and economic growth in Nigeria between 1960 to 2008 using the vector Autoregressive models (VAR). The authors concluded that expenditure on transport; agriculture and health are positive and significantly related with economic growth. However, expenditure on Education is both negative and not significant to economic growth. Niloy Bose M.et al (2007) examined the growth effects of government spending with a particular focuses on disaggregated government expenditures for a panel of 30 developing countries between 1970s and 1980s. They found that the share of government capital expenditure in GDP is positively and significantly correlated with economic growth, but current expenditure is insignificant. In the disaggregated level, government expenditure in education and total expenditures in education are the only spending that is significantly associated with growth. In support of the above, John Mudaki (2012) investigated the effect of the composition of public expenditure on economic growth using data from 1972 to 2008 for Kenya. He concluded that expenditure on education was a highly significant determinant of economic growth while expenditure on economic affairs, transport and communication were also weakly significant to economic growth. On the other hand, expenditure on agriculture was negatively significant on economic growth and expenditure on health is insignificant determinants of economic growth.

Lotto (2011) studied the effect of sectoral expenditure to economic growth with the period from1980 to 2008 in Nigeria. His result showed that in the short-run, expenditure on health and transport and communication was positively related to economic growth. On the other hand, spending on agriculture was negatively related to economic growth. However, the relationship between expenditure on education and economic growth was negative and insignificant. The impact of education, though also negative was not significant. Tajudeen, Egbetunde and Ismail O. Fasanya (2013) explored that the impact of public expenditure on economic growth with the period from 1970 to 2010 making use of annual time-series data in Nigeria. They used the bound's testing Auto-Regressive Distributed Lag (ARDL) approach to analyze the long run and short-run relationships between public expenditure and economic growth. They found that total expenditure has a negative impact on economic growth, however; recurrent expenditure has a little significant positive

Mortazavi Far and Saeedi (2015) showed a study in Iran on the effect of government expenditure on unemployment for the period 1997 to 2003. The investigators used two models with unemployment as the dependent variable. Independent variable in the first equation was government development expenditure with the second equation being government spending on economic development and social development. The equations were using VECM. They found negative and significant relationship between unemployment rate and the variables.

Anthanasios (2013) used the SVAR methodology to find the relationship between unemployment, growth and fiscal policy in Greece. Results from the study show the effect of cuts in government purchases and government consumption on unemployment and output to be large, while the effect of government investment is to a slighter extent. Tax hikes was found to reduce output and increase unemployment. Antonio and Ilian (1998) employed the VAR methodology to investigate the dynamic effects of fiscal policy on macroeconomic

variables. Findings of the study show positive innovations in government spending to be followed by strong and persistent increases in consumption and employment. Bassani and Duval (2006) estimated reduced-form unemployment equations using cross country/time series data for 21 OECD countries during 1982-2003. They find that higher unemployment taxes raise unemployment. For the United States, studies such as Fatas and Mihov (2001) and Burnside et al. (2004) point out the positive impacts of government spending shocks on employment. Similarly, Monacelli et al. (2010) estimate a VAR model to investigate the effects of fiscal policy on labor market variables in the United States.

Battaglini and Coates (2011) found that in the presence of unemployment, reducing taxes increases private sector hiring, while increasing public production creates public sector jobs. Thus, tax cuts and increases in public Output reduce unemployment. Though, both actions are costly for the government. They believe that the way in which the government achieves this is by accumulating bond holdings and long-term indebtedness which complicates the economic health of the nation overtime. O'Nwachukwu (2017) Analyzed the determinants of unemployment rate in Nigeria from 1980 to 2016 using Unemployment rate as dependent variable and explanatory variables which includes: Government Expenditure, Inflation Rate, First Lag of Unemployment, Population and Real Gross Domestic Product. The study reveals that Government Expenditure, Inflation Rate and Population are statistically significant in explaining changes in unemployment in Nigeria for the period under review. But, the lag of unemployment and Real Gross Domestic Product were not statistically significant in explaining unemployment.

Wosewei (2013) Analyzed the relationship between fiscal deficit and macroeconomic performance in Nigeria over the period 1980 to 2010. The study used the Ordinary Least Square in estimating the equation. Preliminary test of stationarity and co integration of variables using the Augmented Dickey Fuller (ADF) test and the co integration test using the Engle Granger procedure were conducted respectively. However, the empirical findings showed that fiscal deficits although that it met the economic a prior in terms of its negative coefficients yet, did not significantly affect macroeconomic output. The study also found a bilateral causality relationship between government deficit and gross domestic product, government tax, and unemployment, while there is an independent relationship between government deficit and government expenditure and inflation.

The research of Obayori, (2016) on fiscal policy and Unemployment in Nigeria, which shows the long run relationship between fiscal policy and unemployment, is not statistically significant at 5% level of significance. If fiscal policy has no significant long run effect on unemployment in Nigeria, no need to wonder why unemployment is on the rise in Nigeria. Audu (2012) examined the causal relations hip between money supply, fiscal deficits and exports in analysis of the effect of fiscal policy on the growth of Nigerian economy (1970 - 2010). Co-integration error correction mechanism and least square employed in determining the impact of money supply, fiscal deficit, and export on gross domestic product. The findings revealed a significant relationship between dependent variable and the explanatory variables leading to the conclusion that fiscal policy significantly influences output growth. Michele (2005) examined the dynamic effects of fiscal policy shocks on government employment in the U.S economy. His findings show that if government consumption expenditure consists solely of purchases of final goods, then fiscal shock lead to a negative and significant wealth; households reduce consumption and increase labour supply. His findings further reveal that a shock in government employment is negative for private output and a positive impulse for government output because output is reallocated from private to government sector.

Murwirapachena et al. (2013) Applying all the necessary diagnostic tests, they subsequently tested for cointegration and applied a vector error correction model (VECM) to estimate the long-run effect of fiscal policy on unemployment and the other economic indicators. The results of their study sindicates that government consumption expenditure and tax have a positive effect on unemployment while 24 government investment expenditure has a negative impact on unemployment in South Africa.

3.0. Data and methodology
3.1. Study Design
This study employed both descriptive and econometric methods of data analysis to achieve the stated objectives. Descriptive analysis (line charts and table) is used to describe the variables and to show the trends of variables. To show the pattern and the Effect of Government spending and Tax rate on Unemployment in Ethiopia the descriptive method of data like tabulation and graph were used. The choice of variables is based on the focus of this study. In this regard the researcher starts with the sources of data and scope, model Specification, test of time series property and method of data analysis.

3.2. Data Types and Sources
This study was conducted by using current reliable secondary source of data to examine the of Impact of Fiscal policy on Unemployment in Ethiopia. The sample period for this study is from 1990-2020 G.C. The major sources of information from secondary data are Ministry of Finance and Economic Development (MOFED),

annual report of National Bank of Ethiopia (NBE), Ethiopian Economic Association (EEA), Central Statistical Agency (CSA) and national metrology. This study were utilized a time series data of 30 years collected by the mentioned sources.

3.2.1. Data Analysis

The data were analyzed by using Time Series regression models of analysis. This study is an attempt to study the relationship between Government spending, taxation and Unemployment for Ethiopia by employing autoregressive distributed lag (ARDL) Model. The ARDL methodology is relieved of the burden of establishing the order of integration amongst the variables. Furthermore, it can distinguish dependent and explanatory variables, and allows testing for the existence of relationship between the variables.

3.2.2. Model specification

To Examine the effect of fiscal policies on employment, the study adopted the model outlined in Baxter and King (1993), as discussed by Murwirapachena et al. (2010) which asserts that employment is a function of government taxation, government investment, and government consumption (variables of fiscal policy). The major tools of fiscal policy are amongst others Government expenditure and taxation. Fiscal policy aimed at increasing employment of resources and also stabilization of the economy. This presumes reduction of unemployment and control of inflation among others. Keynes advocated government spending which has the power to create more jobs capable of increasing production and income generation. On this basis, the functional form of our model is specified thus:

UNEMPL = f (GOVTER, TR) -- (3.1.)

The model is specified as: UNEMPL = (**TR**, GEXP, RGDP, INFL, AGDP………. (3.2) Therefore;

UNEMPL =β1 GEXP + β2 Infl + β3AGDP+ β4 TR + β5RGDP + μ ------- (3.3)

Where: UNEMPL = Unemployment rate

TR=Tax rate (%GDP)

AGDP, = Age dependency ratio

GEXP=government expenditure (%gdp)

Infl = INFL (%gdp)

RGDP=real gross domestic product (%gdp)

This model will be specified as follows: The model is transformed into log-linear form, which is expressed as

LNUNEMPL = a+ β1 INFL+ β2AGDR+ β3 TR+ β4GEXP+ β5RGDP+ + εt… (3.2)

The *β* represent the parameters of the independent variables, *a* constant and *εt* the error term.

This variable is expected to have either a positive or a negative effect on both on unemployment. A summary of the a priori expectations of the variables presented in table 3.1 below.

Table 3.1: A priori expectations of variables

Variables	Expectations Sign
Age dependency ratio	negative
Government expenditure	Positive
Inflation rate	Negative
Tax rate	Negative
Real gross domestic product	Positive

3.4. Estimation Procedure

Methodological approach of the study includes the following steps:

3.5. Unit Root Testing (Stationary Test)

The time series data were tested for stationary. To perform the unit root tests for the variables; real exchange rate, foreign direct investment, interest rate, trade openness and domestic investment, this study used the Augmented Dickey-Fuller (ADF) technique and philipherron test. These tests are employed concurrently for robust results.

3.5.1. Estimation techniques and ARDL Modeling approach

After unit root tests, the next step is to use the ARDL approach, developed by Pesaran et al. (2001) so as to investigate the long-run relationship between the variables. Variables in time series examination are categorized as co-integrated if they exhibit long-run equilibrium relationship and share common trends. Considering the nature of the study, it is relevant to employ Autoregressive Distributed Lag (ARDL) bounds testing due to Pesaran and Shin (1999) and further extended by Pesaran, Shin and Smith (2001). This method is based on the assessment of an Unrestricted Error Correction Model (UECM) which adores several advantages over the conventional type of cointegration techniques. First, it can be applied to a small sample size study. Secondly, it estimates to both short and long run components of the model simultaneously; removing problems associated with autocorrelation and omitted variables. Thirdly, the standard Wald of F-statistics used in the bounds test has

non-standard distribution under the null hypothesis of no cointegration relationship between the examined variables, irrespective whether the underlying variables are I(1), I(0) or fractionally integrated Pesaran, et al, (2001). Fourthly, this technique generally provides unbiased estimates of the long run model and valid t - statistics even some of the regresses are endogenous.

The ARDL models that are will be used in this study are indicated below

$$\Delta LNUNEMPL_t = B_{o+} \sum_{i=1}^{p} ai\, \Delta lnUNEMPL_{t-1} \qquad + \qquad \sum_{i=1}^{q} \emptyset\, i\, \Delta INFL_{t-1} \qquad +$$
$$\sum_{i=1}^{r} \partial i\Delta LNAGDP_{t-1}$$
$$+\sum_{i=1}^{n} \forall i\Delta iLNTR_{t-1}+\sum_{i=1}^{m}{}_{\propto_i} \Delta lnGEXP_{t-1}+B_1 lnUNEMPL_{t-1}+B_2 lnINFL_{t-1}+B_{3LN}AGDP$$
$$+B_4 lnRGDP_{t-1}+B_5 LNTR_{t-1}+e_t \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots 3.6$$

Where $B_o, ai, \partial i, \forall i, \propto_i, \emptyset_i, B_1, B_2, B_3, B_4, B_5$ are parameters to be estimated and e_t is assumed to be white noise error. The test for cointegration using the bound test approach is based on the Wald test.

The F-statistic of the Wald test is compared with the two sets of critical value bounds developed by Perasan et al. (2001). The H0 is rejected when the F-value is greater than the upper bound and the conclusion is that a long-run relationship between the variables exists. If the F-value is less than the lower bound, then the H0 is accepted with the conclusion that there is no long-run relationship between the Variables. The F-test statistic is used in checking the existence of a long-run equilibrium among the variables under study. The null hypothesis for no cointegration among the variables is represented as H0: β0 = ai= ∂i = $\forall i$ =$\propto_i$= $\emptyset_{i=}$ 0while the alternative hypothesis is represented by H1: β0 ≠ai≠∂i ≠$\forall i$ ≠$\propto_i$≠$\emptyset_i$,≠ 0. The F-statistic test is a non-standard which relies on whether the variables included in the model are integrated of order zero I(0) or integrated of order one I(1), the number of regressors and whether the model contains a trend and/or an intercept. The test encompasses the use of critical value bounds which depends on the order of integration of the variables. Thus whether I (0) or I (1) or a mixture of both. Basically two sets of critical values (i.e. I (0) series and I (1) series) are generated. The lower bound critical values is the term used to classify the critical values generated for the I (0) series, whilst the critical values for theI (1) series is referred to as the upper bound critical values. The rule is that if computed F-statistics falls below the lower bound value I (0), the null hypothesis (no co-integration) will not be rejected. Otherwise, if the computed F-statistics exceeds the upper bond value, I (1), then null hypothesis is rejected which indicates that there is co-integration. If the computed result falls between the lower and upper bonds, the test is inconclusive. This is in line with Pesaran et al (2001) that in the case of inconclusive report, investigation may be based on short-run analysis

3.5.2. Error Correction Model

After the test of cointegration, the long-run relationship among the variables is established using the ARDL test for cointegration. The error-correction models (ECM) within the ARDL framework were estimated in order to obtain the short run and long run relationships among the economic variables understudy.

A generalized form of the ECM within the ARDL frame work is represented below: This technique also allows for the introduction of optimal lags of both the dependent and explanatory variables. Implying that, various variables are allowed to have their optimal speed of adjustment to the equilibrium. The error correction version of ARDL model pertaining to the variables in equation (2) is as follows where $\cup$ is the speed of adjustment parameter and EC is the residuals that are obtained from the estimated cointegration model of equation:

$$\Delta LNUNEMPL_t = B_{o+} \sum ai\, \Delta lnUNEMPL_{t-1} + \sum \emptyset\, i\, \Delta lnAGDP_{t-1} + \sum \partial i\Delta INFL_{t-1} +$$
$$\sum_{i=1}^{n} \forall i\Delta LNTR_{t-1} \qquad + \qquad \sum_{i=1}^{m}{}_{\propto_i} \Delta lnGEXP_{t-1} +\cup EC_{t-1} \qquad + \qquad e_i \qquad -$$
$$\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (3.9)$$

Where $LNUNEMPL$ is the dependent variable; the others is a vector of explanatory variables; t represents the time trend and e represents the error term .Where B_o, B_1, B_2, B_3, B_4, B_5 and ∂irepresents the long run coefficient estimators, a ai , ∂i, $\forall i$,$\propto_i$, $and\emptyset_i$, represents the short run dynamic coefficients,$\cup$ represents the speed of adjustment parameter, ECT represents the error correction term.

3.7. Vector Error Correction Model (VECM)

The VECM framework restricts the long run behavior of the endogenous variables to converge to their co integrating relationships, while allowing for short run adjustment dynamics. Therefore, VECM depicts both the short run and long run behavior of a system. After identification of the number of co integrating vectors in the model, a Vector Error Correction Model (VECM) can be estimated by specifying the number of co integrating vectors. This means if there are long run relationships that exist in the model, we can rewrite equation to come

up with the following VECM specification. Where, α is error correction parameter and measures the speed of adjustment, βi are coefficients of the long run relationship in the system and Dt is vector of deterministic variables. If there is only one cointegrating vector and if the endogenous and exogenous variables are identified in the long run analysis, one can develop the VECM by conditioning on the exogenous variables.

Economic variables have short run behaviour that can be captured through dynamic modelling. If there is long run relationship among the variables, an error correction model can be formulated that portray both the dynamic and long run interaction between the variables. If two variables that are non-stationary in levels have stationary linear combination then the two variables are co-integrated. Co-integration means the presence of error correcting representation. That is, any deviation from the equilibrium point will revert back to its long run path. Therefore, an ECM depicts both the short run and long run behaviour of a system.

The lag changes in the relevant variables represent short run elasticity`s (short run variation), while the error correction term (ECT) represents the speed of adjustment back to the long run relationship among the variables. VECM is subjected to a systematic reduction and diagnostic testing process and diagnostic testing process till an acceptable parsimonious model is obtained. In the procedure, all insignificant explanatory regressors with their corresponding lags are released until further reduction is rejected Hendry, 1997).

If the number of co-integrating vector(s) is/are determined and once the endogenous and exogenous variables are identified in the long run analysis system, it is possible to formulate a VECM by conditioning on the exogenous variables. Hence, assuming that Y_t is endogenously determined in the model and X_{jt} representing weakly exogenous variables in the model. Y_t is model using the lagged first difference of Y_t itself, the lagged first differences of the explanatory variables and the error correcting term-which is designed to capture the speed of adjustment to the long run equilibrium. The equation is represented as:

$$\Delta Y_t = \Sigma^p_{i=0}\theta_i\Delta Y_{t-1} + \Sigma^p_{i=0}\alpha\Delta X_{jt-1} + \delta ECT_{t-1} \text{-----------------------------------3.14}$$

Where, lag length of two is determined by Akakie Information Criteria (AIC) and ECT_{t-1} stands for the Error Correction Term. ΔX_{jt-1} is a vector of first differences of explanatory variables, ΔY_t is a vector of first differences of endogenous variable(s). The general VECM model for Unemployment is represented below using the respective variables used in the estimation of the long run equilibrium equation. Similarly, the dynamic model for Unemployment on the other variables which are weakly exogenous is given below.

$$\Delta lUNEMPL=\Sigma^p_{i=0}\Delta lUNEMPL+\Sigma^p_{i=0}\Delta lRGDP+ \qquad \Sigma^p_{i=0}\Delta lAGDP \qquad + \qquad \Sigma^p_{i=0}\Delta lGEXD \qquad +$$
$$\Sigma^p_{i=0}\Delta lINFL+\Sigma^p_{i=0}+\Sigma^p_{i=0}\Delta lTR+ ECT_{t-1}\text{--------------------3.15}$$

3.7.3. Lag selection criteria

In order to carry out ARDL estimation, the choice of lag length is vital. There is various lag length criteria, among them; Akaike information criterion (AIC), Sequential modified LR test statistic with each test at 5%, the Final prediction error (FPE), Schwarz information criterion (SC) and the Hannan-Quinn information criterion (HQ). However each of these has different penalty factors. For the purpose of this study, we therefore limit the selection to Akaike information criterion (AIC) and Schwarz information criterion (SC).

3.7.4. Stability Test

According to Pesaran and Shin (1998) the Cumulative Sum (CUSUM) and Cumulative Sum of Squares (CUSUMSQ) are employed in performing parameter stability test. The stability of the model and the coefficients should be tested through the CUSUM and CUSUM-Q, despite the fact the graphical presentation of the recursive coefficients is used to judge the stability of the coefficients.

3.7.5. Diagnostic tests

The model that has been used for testing the long-run relationship and coefficients is further tested with the diagnostic tests of normality, Serial Autocorrelation, Heteroscedasticity and any model misspecifications. The test is carried out to test the robustness of the results from the ARDL model.

3.8. Granger-Causality Model

This test is in order to indicate the direction of causality between the dependent variable and the independent variable. The study Were adopted the multivariate vector autoregressive (VAR) model to determine causality between Unemployment, Government expenditure and Tax revenue.

$$UNEMPL_t=a_{0+\sum^q_{i=1} a_i} UNEMPL_{t-i}+\sum^q_{j=1} c_j GEXP_{t-j}+e_{1t} \text{......................} (3.10)$$

$$GEXPD_t=B_0+\sum^q_{i=1} B_i GEXP_{t-i} +\sum^q_{j=1} a_i UNEMPL_{t-i}+e_{2t} \text{....................} (3.11)$$

$$TR_{t=} a_0+\sum^q_{i=1 a_i} TR_{t-i} +\sum^q_{i=1 c_j} UNEMPL_{t-j} +e_{1t} \text{....................} (3.12)$$

4.0. ANALYSIS AND DISCUSSION OF EMPIRICAL RESULTS

4.1. Descriptive analysis

The section begins the empirical analysis with a descriptive statistic of the variables to examine the

characteristics of the variables. Table 4.1 below presents the summary statistics of the variables used for this analysis. Unemployment as a percentage of total labor force averaged 1.370865 over the period with a standard deviation of 0.173854. Government expenditure as a percentage of GDP also averaged -1.661380% with a standard deviation of 0.179916. Real GDP as in percentage averaged 11.23309% with a standard deviation of 0.662464. The highest value of 12.42695% was recorded by Ethiopia, while the lowest value of 10.34325% was recorded. All variables show positive skewness apart Tax revenue which shows a negative skewness value. Standard kurtosis advocates that a value above 3 shows evidence of non-normality. But, Kim (2013) suggests that this criterion may be unreliable when the sample size exceeds 300. He suggests that an absolute kurtosis value greater than 7 is evidence of non-normality. Based on this criterion, all variables are normally distributed.

Table 4.1 descriptive analysis

	LNUML	LNRGDP	LNTR	INFL	LNAGDP	LNGE
Mean	1.370865	11.23309	2.116079	10.67308	8.28E+08	-1.661380
Median	1.275363	11.04134	2.122422	8.302638	2.72E+08	-1.715354
Maximum	1.682688	12.42695	2.421447	44.39128	4.14E+09	-1.307853
Minimum	1.153732	10.34325	1.722906	-8.484249	0.000000	-1.982678
Std. Dev.	0.173854	0.662464	0.162408	11.44203	1.24E+09	0.179916
Skewness	0.346928	0.415404	-0.445497	1.134258	1.670506	0.336301
Kurtosis	1.549725	1.776142	3.277232	4.631626	4.411671	2.427850
Jarque-Bera	3.123219	2.735088	1.052128	9.760462	16.44398	1.007177
Probability	0.209798	0.254732	0.590926	0.007595	0.000269	0.604358
Sum	39.75508	336.9927	61.36630	320.1924	2.48E+10	-51.50279
Sum Sq. Dev.	0.846307	12.72690	0.738537	3796.681	4.44E+19	0.971097
Observations	29	30	29	30	30	31

**4.1.1. Trends of fiscal policy and Unemployment rates**

Unemployment has experienced fluctuating movements over the past decade in Ethiopia. The graphs show trends in unemployment (% of the total labor force) for Ethiopia. The graphs show a consistent decline in unemployment after 2012, though the values remain relatively high. This shows that unemployment remains a major difficulty in Ethiopia.

Fiscal policy involves government spending and taxation. This study, however, concentrates on government spending and Tax as the major tool for fiscal policy. Government consumption expenditure has been fluctuating over the period under study
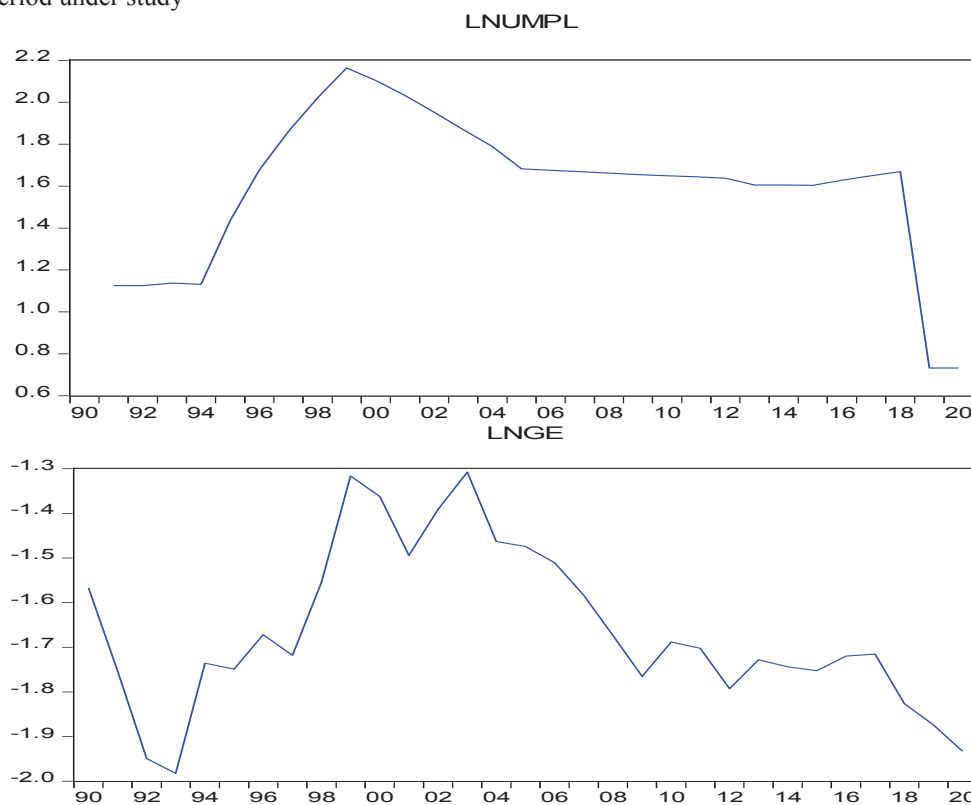
Figure 4.1 GE, unempl and TR trend

LNTR
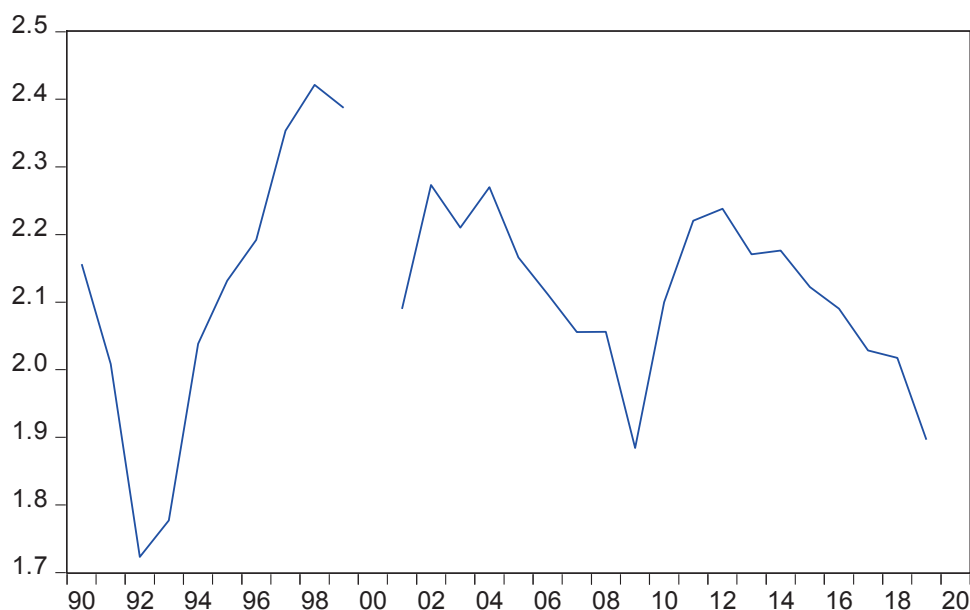
4.2. Unit Root result

Time series must be checked for stationary before estimating a model. To examine whether the data series under study is stationary at levels or stationery at first differences. The study employed ADF unit root test and PP unit root test to check the order of integration for all series.

The results indicate that test of unit root test with intercept levels and first difference for each series is presented in the table 4.2a. Both tests indicate that the series LNUNMPL, LNGE, LNTR and LNAGDP at levels contain a unit root, but they are stationary at first difference LNGDP and INFL is stationary at levels. Moreover, in applying ARDL model, all the variables entered in the regression should not be integrated of order two. To check these conditions, unit root test was conducted before any sort of action taken. Even though the ARDL framework does not require pre-testing variables to be done, the unit root test could convenience us whether or not the ARDL model should be used.

Table 4.2a. Augmented Dickey Fuller Test results

Variable	At Level			At First Difference		
	Intercept	intercept and trend	none	intercept	intercept and trend	None
LNUML	-1.593241	-2.167731	-0.378351	-4.392420^*	-3.965843	-4.050990
LNRGDP	-4.271998*	-3.475240	0.197224	-5.584969	-5.612381	-5.579231
LNTR	-3.165334	-2.700080	-1.001328	-1.59244	-4.185239^*	1.94794
INFL	-4.194425*	-2.167731	-0.378351	-3.194425	-3.965843	-4.050990
LNAGD	2.04534	- 1.791866	0.276206	-2.103412	-1.308724	-2.081487^*
LNGE	2.085534	- 1.791866	3.475240	-4.062034	-5.062034*	-3.062034

Table 4.2b. Phillips-Perron (PP) Unit Root tests at level and at first difference

Variable	At Level			At First Difference		
	Intercept	intercept and trend	none	intercept	intercept and trend	None
LNUML	2.085534	- 1.791866	-7.967378^*	-6.175456	-2.308724	-4.387253^*
LNRGDP	2.085534	- 1.791866	0.276206	-2.103412	-2.308724	-2.081487^*
LNTR	-3.165334	-5.700080	-4.001328	-4.165334^*	-12.93452-	13.94794
INFL	-4.194425*	-0.172321	3.824058	-3.194425	-6.095208-	3.248055
LNGE	-1.593241	-2.167731	-0.378351	-4.743167*	-3.965843	-4.050990
LNAGDP	2.085534	- 1.791866	-1.067718	-6.175456	-2.308724	-2.081487^*

Table.4.3. VAR order lag selection criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	10.21573	NA	2.84e-08	-0.351311	-0.056797	-0.273176
1	207.8310	279.9550	4.46e-14	-13.81925	-11.75766	-13.27231
2	278.0567	64.37359*	5.04e-15*	-16.67139*	-12.84272*	-15.65565*

* indicates lag order selected by the criterion
LR: sequential modified LR test statistic (each test at 5%level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

According to Pesaran and Shine (1999), as quoted in Narayan (2004) for the yearly data are suggested to choose a maximum of two lag lengths. From this, a lag length that minimize AIC is 2. Hereafter, AIC is used to determine the optimal lag since it is a better choice for smaller sample size data. Furthermore, AIC found to produce the least probability of under estimation among all criteria available (Liew *et al.,* 2004). The model that minimize the AIC was chosen automatically by Eview 10 as presented in figure [4.3] above.

4.2.1. Bound Test for Cointegration Analysis Based on Equation

The result of bound test for cointegration in table 4a indicates that null hypotheses were rejected because the F-statistics (**5.060806**) is greater than upper bound value (**3.2**) at 5 percent critical value. This indicates the existence of long run relationship between Unemployment and Fiscal policy in Ethiopia and confirms Murwirapachena etal. (2013). This implies that the null hypothesis of no long-term relationship rejected and therefore it suggests that there is evidence of long-term relationship among the variables.

Table.4.4a.F bound test - Null Hypothesis: No long run relationship

Test Statistics	Value	Signif.	I(0)	I(1
F-statistic	5.060806	10%	2.37	3.2
K	3	5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

Table.4.4b. Long run coefficient of ARDL

Variable	Co-eff.	Std. error	T statistic	Prob
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LNRGDP	-0.082638	0.098481	-0.839119	0.4231
LNTR	0.429455	0.071907	5.972332	0.0002
INFL	-0.000459	0.001184	-0.387381	0.7075
LNAGDP	-0.174713	0.541297	-0.322766	0.7542
LNGE	-0.420226	0.170650	-2.462498	0.0360
EC = LNUML - (-0.0826*LNRGDP + 0.4295*LNTR -0.0005*INFL -0.1747 *LNAGDP -0.4202*LNGE + 1.5959)				

There is a statistically negative relationship between Government expenditure and Unemployment in line with Mortazavi Far and Saeedi (2015) and Obayori (2016) and positive relationship between Tax revenue and Unemployment similar to Anthanasios (2013) and Battaglini and Coates (2011). The results show that increase in the LNGE and LNTR by 1 percent leads to 0.036 and 0.0002 percent decrease and increase in Unemployment rate and this is significant respectively.

Table 4.4c. Error Correction Representation of the ARDL (2, 0, 0, 2, 2) model

ARDL model based on Akaike Information Criteria (AIC) Dependent variable: LNUNMPL				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LNUML(-1))	1.294841	0.112113	11.54938	0.0000
D(LNRGDP)	-0.225457	0.049014	-4.599873	0.0013
D(LNRGDP(-1))	-0.184705	0.075761	-2.437996	0.0375
D(LNTR)	0.248376	0.040577	6.121085	0.0002
D(LNTR(-1))	0.077227	0.027611	2.796907	0.0208
D(INFL)	0.000612	0.000227	2.694650	0.0246
D(LNAGDP)	7.431014	0.950936	7.814418	0.0000
D(LNGE)	-0.122135	0.028157	-4.337599	0.0019
CointEq(-1)*	-0.737561	0.098067	-7.521016	0.0000

Table 4.4c shows short run coefficient results. Shows that, in the short run, Economic growth and Government expenditure has positive impact on unemployment rate.

Similarly, Tax revenue, inflation, and age dependency ration rate, has positive effect in short run. The results show that increase in the government expenditure and in Economic growth rate by 1 percent leads to 0.037 and 0.12 percent decrease in Unemployment rate respectively.

The Error Correction Term (ECT) measures the speed of adjustment towards equilibrium after the initial deviations are corrected. The ECT coefficient is -0.737561 and significant at the 1% level of significant. This indicates that at 73.7% of the dis-equilibrium due to the shock in the previous years is adjusted back to the long run equilibrium in the current year.

4.4. Granger Causality Test Analysis

In many studies which examine causality, Granger Causality tests have been the most commonly used method. Based on the results presented in Table 4.5, hypotheses (a) (were accepted at 5% level of significance because their p-values are individually greater than 0.05. But for the second null hypothesis was rejected at 5% level of significance since the p-value is less than 0.05. This means that during the period under study, there was unidirectional causality between a Tax revenue and unemployment because the null hypothesis that unemployment Granger causes Tax revenue was not rejected. This indicates there was causality between unemployment Granger causes Tax revenue at 5% level of significance, meaning that unemployment Granger causes Tax revenue. These show that, within the sample of the study, there was unidirectional causality running from unemployment to Tax revenue and also Government expenditure.

Table 4.5 a pairwise granger causality tests.

Pairwise Granger Causality Tests
Date: 05/23/21   Time: 12:15
Sample: 1990 2020
Lags: 4

Null Hypothesis:	Obs	F-Statistic	Prob.
LNTR does not Granger Cause LNUML	20	1.27508	0.3374
LNUML does not Granger Cause LNTR		9.28253	0.0016
LNRGDP does not Granger Cause LNUML	25	3.47417	0.0318
LNUML does not Granger Cause LNRGDP		3.76630	0.0242
LNGE does not Granger Cause LNUML	25	1.20218	0.3481
LNUML does not Granger Cause LNGE		5.76958	0.0045
LNAGDP does not Granger Cause LNUML	25	1.94314	0.1522
LNUML does not Granger Cause LNAGDP		3.36196	0.0353

4.6. Model Stability and Diagnostic Test

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	1.577022	Prob. F(2,16)	0.2371
Obs*R-squared	4.281349	Prob. Chi-Square(2)	0.1176

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.399002	Prob. F(7,18)	0.8905
Obs*R-squared	3.492440	Prob. Chi-Square(7)	0.8360
Scaled explained SS	3.100539	Prob. Chi-Square(7)	0.8755

Ramsey RESET Test
Equation: UNTITLED
Specification: LNUML   LNUML(-1) LNUML(-2) LNRGDP LNRGDP(-1)
   LNRGDP(-2) LNTR LNTR(-1) LNTR(-2) INFL INFL(-1) LNAGDP
   LNAGDP(-1) LNGE LNGE(-1) C
Omitted Variables: Squares of fitted values

	Value	Df	Probability
t-statistic	0.970991	8	0.3600
F-statistic	0.942823	(1, 8)	0.3600

F-test summary:

	Sum of Sq.	df	Mean Squares
Test SSR	0.000236	1	0.000236
Restricted SSR	0.002236	9	0.000248
Unrestricted SSR	0.002001	8	0.000250

To check the verifiability of the estimated long-run model, some diagnostic test is undertaken. Priority in doing any analysis, we required checking the standard property of the model. In this study, we carried a number of model stability and diagnostic checking, which includes Serial correlation test (Brush & Godfray LM test), Functional form (Ramsey's RESET) test, Normality (Jaque-Bera test), and Heteroscedasticity test. In addition to the above diagnostic tests, the stability of long-run estimates has been tested by applying the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSQ) test. Such tests are recommended by Pesaran et al. (2001). In order to reject or accept the null hypothesis, we can decide by looking the p-values associated with the test statistics. That is the null hypothesis is rejected when the p-value is smaller than the standard significance level (I.e., 5%)

4.3. Diagnostic test model for ARDL model

The stability of the model for long run and short run relationship is distinguished by using the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSQ) tests, Pesaran and Shin (1997) suggested that structural stability of the long-run and short-run relationships for the full period is better tested by the cumulative sum (CUMSUM) and the cumulative sum of squares(CUMSUMSQ) of the recursive residual test as proposed by (Brown et al, 1975) to assess the given parameter consistency. The null hypothesis of these tests is that the regression equation is correctly specified. If the cumulative sum goes outside the area (never returns back) between the two critical lines. Accordingly Graphical representations of CUSUM and CUSUM square are shown in figure5a and 5b .As to Bahmani and Oskooee, (2004) the null hypothesis (i.e. that the regression equation is correctly specified) cannot be rejected if the plot of these statistics remains within the critical bounds of the 5% significance level. This graphs show the long run stability of the model because test statistics are within the bound values of a model for 5 % significance level.
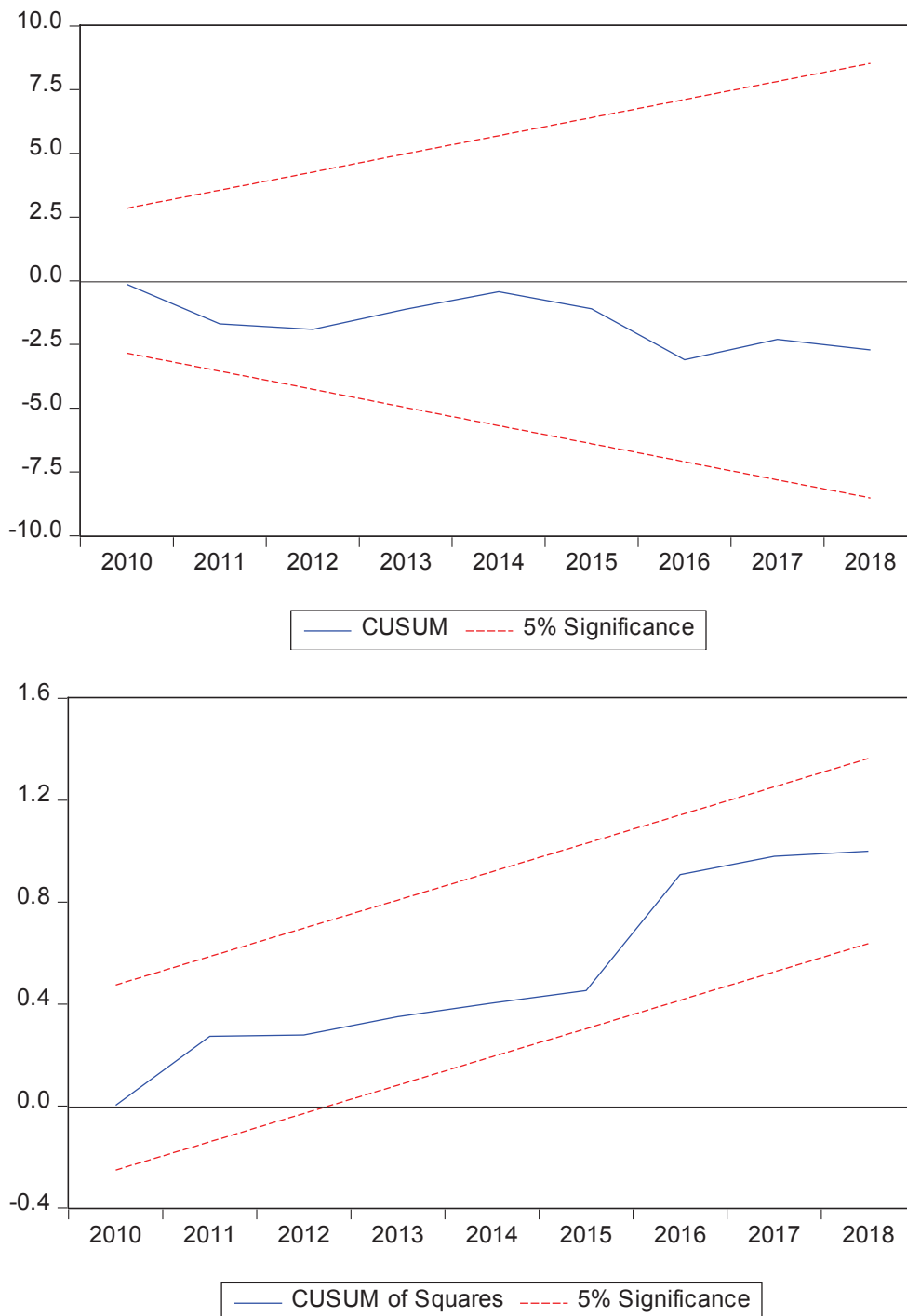
Figure 4.5 stability test

5.0. CONCLUSION AND RECOMMENDATIONS
5.1. CONCLUSION

The main objective of this study was to examine the short term and long-term effects of Government spending and Tax revenue on unemployment in Ethiopia. Annual time-series data for the period of 1990-2021 were employed. This study therefore primarily attempts to investigate the empirical relationship Government spending and Tax revenue on unemployment in Ethiopia by applying the ARDL bounds testing model to examine both the long and short run on the variables of interest.

The study used Philip-Peron (PP) and Augmented Dickey–Fuller (ADF) unit root tests to confirm all the variables are integrated of order I[0] or [1]. To make sure that long run and short run dynamics exist in the variable of interest, the researcher approve using the variable addition test in which the F-statistics exceeds the Pesaran et al., (2001) calculated value. This Indicates the presence of long and short run dynamics exist. The

study finds out that all the models pass the diagnostic test by confirming the model pass all the problems associated with ARDL model in time series such as serial correlation, functional form, normality and heteroscedasticity. The model similarly permits the stability test by confirming that the cumulative sum of recursive residuals (CUSUM) is significant at 5% level. The Durbin-Watson test to serial correlation, Breusch-Pagan test to heteroscedasticity and the Jarque-Bera test to normality were employed to test the reliability of the goodness of fit of the model

The bounds test confirms that there exist long-run relationships between Government spending and Tax revenue on unemployment in Ethiopia. The long-run estimates of ARDL test indicated negative and significant relationship exists between Government spending and Tax revenue on unemployment. Government spending and Tax revenue a negative and positive on unemployment and statistically significant impact in the long run. The negative impact of Government expenditure on Unemployment is in line with Kelechukwu and Amadi (2016) and positive impact of tax revenue on unemployment, in line with Murwirapachena et al. (2013)

Furthermore, pairwise Granger causality test as well applied in order to find out the directional causation between Fiscal policy and Unemployment.

The study Also perform the model stability tests and the result revealed that no evidence of serial correlation, no functional form problem (the model is correctly specified), the residual is normally distributed and no evidence of Heteroscedasticity problem. To determine the direction of causality granger causality is used in the study. The result shows that there exists short run and long run unidirectional causality running from, Unemployment to Government expenditure and tax revenue in Ethiopia. The result of causality test suggests that Unemployment does granger causes Government expenditure and tax revenue, but both Government expenditure and tax revenue does not Granger cause Unemployment.

The methodology employed in this study included the regression analysis to examine the impact; stationary test was carried out using the Augmented Dickey-Fuller technique and Phillips-Perron (PP) test. The results of unit root suggested that both variables in the model were stationary after first difference. The results from regression analysis revealed that Government expenditure has the negative impact on Unemployment of Ethiopia. Co-integration technique was employed to establish the relationship between Fiscal policy and Unemployment. The results of co-integration test using ARDL test showed that over the period of 1990-2021 their Fiscal policy and Unemployment a negative and statistically significant short-term relationship was found. Furthermore, pairwise Granger causality test as well applied in order to find out the directional causation between Tax rate and Unemployment rate. The result indicates unidirectional causality running from unemployment to Tax and government expenditure.

The implication of the findings is that the explanatory variables Tax revenue and government in line with Holden and Sparrman (2016) and Bassanini and Duval (2006a) expenditure study with the exerts significant and positive and negative influence respectively as key fiscal policy instrument in determining the in Ethiopian economy.

5.2. RECOMMENDATIONS

- The study also revealed that there is a negative relationship between Government spending and that of Unemployment. Therefore, the country should spend more to reduce Unemployment and the concerned body should increase government spending on productive projects that are labor intensive which would increase employment.
- The study indicates the positive relationship between tax rate and Unemployment rate; increases in the tax revenues reduce output growth and increase unemployment. Thus, based on the study, the author suggested government should strongly implement viable fiscal policies (tax cut) to increase output then create more employment.
- The study found negative relationship between economic growth and unemployment rate. As economic growth increase unemployment will decrease. Thus, the government should focus on investment that could increase economic growth to reduce unemployment rate.

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