Fiscal Policy, Public Investment and Economic Growth in Ethiopia

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Declaration

I, the undersigned, declare that this thesis is my original work and has not been presented for a Masters degree in any other university, and that all the sources of materials used for the thesis are duly acknowledged.

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ABSTRACT

It remained a big intellectual puzzle both on theoretical and empirical front that the question of whether or not fiscal policy spurs economic growth. Proponents of government intervention believe that government involvement in economic phenomena is crucial for growth, but opponents have a view that government involvements are naturally bureaucratic and unproductive and therefore retarding rather than promoting growth. This contradicting view comes up with equally mixed results in the empirical literature. In line with argument, objective of this study is to contribute towards the literature on fiscal policy, public investment and economic growth in Ethiopia. This study used time series techniques and applied empirical model by Kneller et al (1999) and Bleaney et al (2000) to investigate the link between various components of fiscal policy on growth on annual data for the period 1981 – 2013. It employed the autoregressive distributed lag estimation technique. Results of the bound tests indicated that there was a long-run relationship between the variables. Disaggregating government expenditure into productive and unproductive and tax revenue into distortionary and non distortionary. The study found unproductive expenditure and nondistortionary tax revenue to be neutral to growth as predicted by economic theory. Productive expenditure has positive effect on growth while there was evidence of distortionary effects on growth. On the other hand, government investment was found to be beneficial to growth in the long run. These results give right signal to policy makers in Ethiopia in formulating expenditure and tax policies to ensure unproductive expenditures are reduced while at the same time boosting public investment.

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CHAPTER ONE

1. INTRODUCTION

1.1 Background of the study

A country's economy needs substantial amount of capital to produce national output and sustain economic development. By and large, governments are still the most prominent financiers of infrastructure investment in Sub-Saharan Africa. Currently, Governments in Sub-Saharan Africa (SSA) spend on average between 6–12 percent of their GDP on infrastructure each year. Countries such as Cape Verde, Ethiopia, and Namibia spend well above 10 percent of their GDP on infrastructure annually (Jerome, 2011).

In July 2010, the Government of Ethiopia announced the Five-Year Plan for Economic Development called the Growth and Transformation Plan I (GTP I) and recently endorsed GTP II as its successor. According to this plan, the government issued US$ 75-79 billion over five years to finance public investment. In fact, the government spent US $30 billion over five years to restructure the economy. Many controversies have arisen since the plan was announced. The popular view is that the plan is too ambitious and will disturb the economy by crowding out private investment and by worsening the fiscal structure of the government.

In its three years of achievement GTP(2011-2013) showed that government expenditure has on average been birr 125.5 billion per annum, of which on average 58 percent has been spent on capital investments while, the remaining 42 percent was spent on recurrent expenses. In 2012/13, birr 153.9 billion has been spent by the general government, of which birr 91.2 billion or 59 percent was spent on capital expenditures while the remaining birr 62.7 billion or 41 percent was spent on financing recurrent expenditures. This spending pattern is consistent with the stated fiscal policy of the government that accords higher priority to capital spending (GTP report, 2013).

In addition, in the three years the total spending on growth oriented pro-poor sectors of education, agriculture and food security, water and sanitation, health and roads sector spending amounted to birr 258 billion. This indicates that every year on average birr 85.9 billion or 69 percent of the total spending has been on these priority sectors. In 2012/13 alone, the spending on these sectors was birr 107.8 billion, which accounted for over 70 percent of the general government spending. The allocation and spending pattern of government budget over the last three years on growth-oriented and pro-poor sectors demonstrates the commitment of the country towards eradicating poverty in all its dimensions (MoFED 2014).

It is commonly understood fact is that public expenditure on different sectors of the economy of developing nations demand more budgetary allocations every year. While spending on different sectors of the economy, there is a need to investigate the effectiveness of the budget and to examine the impact of fiscal policy on economic growth. Identifying the short run and long run relationship between fiscal policy and economic growth can play a great role in utilizing the country's scarce resource efficiently.

Even though the current Ethiopian government in recent years is highly spending on different sectors of the economy, the effect of spending on the country's economic growth is still controversial and different studies come up with different findings with this regard. Some of them find a positive and significant relation between government sectoral spending and economic growth while others find significantly negative or no relation between an increase in government sectoral; expenditure and economic growth.

In the recent years, the large increase in public investment was also due to the priority of the current government to make Ethiopia a Middle-income country by the year 2025. This paper is intended as a contribution to the literature on fiscal policy, public investment and growth in Ethiopia. The study will draw attention to the potential importance of a previously neglected factor, namely that determinants of public investment. As public investment is component of fiscal policy, it is pivotal to assess the factors contributing to need for higher demand for investments in public expenditure.

1.2 Statement of the Problem

Focus on the analysis of the fiscal sector is the most important concern of economic policy. Supporters of government intervention in economic activity maintain that such intervention can stimulate long term growth. They cite government's task in ensuring effectiveness in resource allocation, regulation of markets, stabilization of the economy, and harmonization of social conflicts as some of the ways in which government could facilitate economic growth. In the context of endogenous growth, government role in promoting accumulation of knowledge, research and development, productive public investment, human capital development, law and order can generate growth both in the short- and long-run [Easterly and Rebelo (1993),Chrystal and Price (1995), Mauro (1995), Folster and Henrekson (1999)].

On the other hand, opponents hold the view that government operations are inherently bureaucratic and inefficient and therefore stifle rather than promote growth. It seems then that as to whether government's fiscal policy stimulates or stifles growth remains an empirical question. Even so, the existing empirical findings are mixed, with some researchers finding the relationship between fiscal policy and growth positive, negative, or indeterminate.

While on the other side, endogenous growth model by Barro (1990), Lucas (1990) and King and Rebelo (1990) showed that physical and human capital do impact economic growth but fiscal policy variables like distortionary taxation and productive expenditure affect both the output level and its steady state growth rate. Series of studies like Barro and Sala-i-Martin (1992); (Barro and Sala-i-Martin, 1995), Jones et al. (1993), Easterly and Rebelo (1993), and (Stokey and Rebelo, 1995) have investigated the endogenous growth model and also discussed the condition under which fiscal policy variables can influence economic growth.

Public investments makes substantial contributions in terms of economic growth, productivity improvement, employment, trade competitiveness, environmental sustainability and people's safety (Zhang, 2011; Agenor, 2010; Heintz et al, 2009; Rioja, 2001).

Ethiopia is driven by its vision to become a middle-income country and a carbon-neutral economy by 2025. The vision has been backed by prudent macro-policy management and significant investments in infrastructure. Ethiopia holds a long record of steady economic growth. Over the

past decade, the average annual gross domestic product (GDP) growth has been 10.6%, that is, double the average in the rest of Sub Saharan Africa.

The general government deficit expanded only marginally (by 0.2 percentage point) to an estimated 2.8 percent of GDP. At the same time, public enterprises continued to borrow heavily to finance their accelerated investment plans. As a result, their financing needs increased to 7.4 percent of GDP, while public and publicly-guaranteed debt reached an estimated 50 percent of GDP in June 2015(IMF 2015).

To address the country‘s infrastructure deficit the Ethiopian government began spending huge amount of money in each fiscal year in addition to public enterprises investment. In the 1999/00 fiscal year the total physical public infrastructure investments (on transport, road construction, energy and telecommunication) equaled 5.82 percent of GDP and the total social public infrastructure investments (on education and health) equaled 0.69 percent of GDP; in 2009/10 fiscal year the gross capital formation of physical and social infrastructure increased impressively to 10.65 percent and 2.63 % of GDP respectively.

In the 2013/14 fiscal year the physical and social infrastructure investment was 9.83% and 2.42% of GDP, in this fiscal year the infrastructure investment as percentage of GDP decrease but it doesn‘t mean the total investment amount decreased rather it is due to the expansion of the country‘s economic base (MoFED database).

The figures above infer that the increment in public infrastructure in Ethiopia is quite impressive. So, this increase in the public investment from time to time has the connotation of how crucial this spending is for development.

To date, very few studies have examined the impact of fiscal policy on economic growth in Ethiopia. Most of the studies have either analyzed the impact of government expenditure or taxation or aggregate public investment on economic growth. This confirmed that previous studies in Ethiopia focused on investigating the impacts of aggregate fiscal policy instruments without categorizing into components of fiscal policy variables.

Some of the studies in Ethiopia in line with this study include: Abdu (2014) showed that expenditure on health and total capital expenditure is both positive and statistically significant in explain the growth of Ethiopian economy. However, Expenditure on agriculture, education, health, transport and communication, urban development and housing, and total recurrent expenditure are statically insignificant. Study by Wondwosen (2012) on Impact of government Sectoral Spending on Economic growth in Ethiopia found that education sector expenditure has both short-run and long-run statistically positive-significant effect on growth while health sector spending have negative insignificant relation.

Similarly, study by Teshome(2006) found that expenditure on human capital have long-run significant positive impact and government spending displays a negative but insignificant impact on growth of real GDP, which according to the researcher reveals the inefficiency and poor quality nature of public investment. His study also indicates in the short run, all components of government expenditure do not have significant meaning in explaining economic growth.

Furthermore, this study attempted to fill the gap of empirical studies in Ethiopia on the area of financial aspect of the economy on following aspects; this study disaggregates fiscal policy instruments into different components and show their impact on Ethiopia's economic growth. This is mainly due to previous studies in Ethiopia focused on effects of aggregate expenditure or tax revenue on Ethiopia's economic growth. In addition in cognizant of the fact that capital expenditure which is public investment is the largest component of fiscal variable in Ethiopia, this motivates the study to shed light on its determinants.

Specifically, test is conducted on the theoretical hypothesis that unproductive expenditure and non - distortionary taxes have neutral effects on long run growth and therefore can be eliminated from the growth model without loss of useful information and eliminating these variables improves the precision of parameter estimates of the remaining variables. Then using the shortened model to estimate and analyse the effects of fiscal policy on growth in Ethiopia. In empirical testing of the theoretical model for 22 OECD countries, Kneller et al (1999) used panel data estimation technique to verify Barro's (1990) theoretical model. This study employs time series techniques on annual time series data for Ethiopia.

1.3 Objectives of the study

This paper assesses the impact of fiscal policy on growth in Ethiopia and the channels through which its effects are realized. Again, attention is also given to the indirect effects of fiscal policy on growth via its impact on public investment.

The specific objectives of the study include:

- To determine the effects of components of fiscal policy on economic growth in Ethiopia
- To investigate the impacts of some of non-fiscal policy variables on Ethiopian economic growth
- To identify variables that determine public capital formation and public investment
- Draw policy implications and lessons to be used as an input for future policy formulation

1.4 Research Questions

The questions to be answered in this paper are:

1. What are the main components of fiscal policy that can deter or spur economic growth in Ethiopia?
2. Which fiscal policy instrument is important in drivers of economic growth in Ethiopia?
3. What are the main determinants of public investment in Ethiopia?
4. Do public investment and private investment are complementary or substitute to each other in Ethiopia?
5. What are the policy implications derived from the findings?

1.5 Significance of the Study

This study has significance to inform policy makers on debate on fiscal policy-growth nexus and will contribute to the literature on the matter of fiscal policy and public investment in Ethiopia.

To Ethiopian government, policy implications from this empirical study thereof are of significance in as far as spurring economic growth and promoting the private sector in the country.

The finding of study also is significant to the private sector in so far as it will give a positive role of private investment in Ethiopia's economic development. Moreover for researchers with interest on fiscal policy, this research will provide a window opportunity for further research in identifying: its impact on not only at national level but also at the regional level even at the municipality level.

1.6 Scope and Delimitations of the Study

The study was delimited to the period 1981-2013 since data on disaggregated components of fiscal policy was available for this period. The study was also delimited in the scope to which the effect of fiscal policy had been felt at macro level.

1.7 Organization of the Study

This study is organized as follows. Chapter one is an introduction that gives background information about the fiscal policy stance in Ethiopia and the macro economy. Chapter two deals with the literature review and focus on the theoretical and empirical literature. Chapter three presents descriptive analysis on Ethiopian macroeconomic policy and performance. Chapter four focuses on the methodology. The theoretical framework for the study, the model specification and estimation method are also presented. Chapter five provides the study findings, while conclusions and policy implications are presented in chapter six.

CHAPTER TWO

2. LITERATURE REVIEW

2.1 Review of the Theoretical Literatures

2.1.1 Growth Models with Fiscal Policy

Neoclassical growth models imply that government policy can affect only the output level but not the growth rate (Judd, 1985). However, endogenous growth models incorporate channels through which fiscal policy can affect long-run growth (Barro 1990, Barro-Sala-i-Martin 1992, 2004).

The latter models classify generally the fiscal policy instruments into: a) distortionary taxation, which weakens the incentives to invest in physical/human capital, hence reducing growth; b) non-distortionary taxation which does not affect the above incentives, therefore growth, due to the nature of the utility function assumed for the private agents; c) productive expenditures that influence the marginal product of private capital, henceforth boost growth; d) unproductive expenditures that do not affect the private marginal product of capital, consequently growth.

The endogenous growth models predict that an increase in productive spending financed by non-distortionary taxes will increase growth, whilst the effect is ambiguous if distortionary taxation is used. In the latter case, there is a growth-maximizing level of productive expenditure, which may or may not be Pareto efficient (Irmen-Kuehnel, 2008). Also, an increase in non-productive spending financed by non-distortionary taxes will be neutral for growth, while if distortionary taxes are used the impact on growth will be negative.

Various extensions of the basic endogenous growth models have been worked out, allowing publicly-provided goods to be productive in stock and/or flow form (e.g. Futagami-Morita-Sibata, 1993, Cashin 1995, Ghosh-Roy, 2004), different forms of expenditure to be productive (e.g. Devarajan et al.1996, Sala-i-Martin 1997, GlommRavikumar 1997, Gomez, 2007), various forms of taxation (Ortigueira, 1998).

There is no agreement among economists either on analytical grounds or on the basis of empirical results whether financing government expenditure by incurring a fiscal deficit is good, bad, or neutral in terms of its real effects, particularly on investment and growth. Generally speaking, there are three schools of thought concerning the economic effects of budget deficits: Neoclassical, Keynesian and Ricardian. Among the mainstream analytical perspectives, the neoclassical view considers fiscal deficits detrimental to investment and growth, while in the Keynesian paradigm, it constitutes a key policy prescription. Theorists persuaded by Ricardian equivalence assert that fiscal deficits do not really matter except for smoothening the adjustment to expenditure or revenue shocks. While the neo-classical and Ricardian schools focus on the long run, the Keynesian view emphasizes the short run effects.

By definition, a country faces a problem of budget deficit if the government expenditures exceed its revenues. In other words, the level of public savings is negative Ball and Mankiw (1995). This scenario may give harm to the economic growth of a country. In relation to the economic growth, it can be defined as an increase in the level of production over time. It can be measured by looking at the increasing pattern of real Gross Domestic Product (GDP) from time to time. Various factors may contribute to the economic growth of a country; namely labor force, technology, capital, knowledge, natural resources and etc. Snowdon and Vane (2005).

2.1.2 The Neo-Classical View

The component of revenue deficit in fiscal deficits implies a reduction in government saving or an increase in government dis-saving. In the neoclassical perspective, this will have a detrimental effect on growth if the reduction in government saving is not fully offset by a rise in private saving, thereby resulting in a fall in the overall saving rate. This, apart from putting pressure on the interest rate, will adversely affect growth. The neo-classical economists assume that markets clear so that full employment of resources is attained. In this paradigm, fiscal deficits raise lifetime consumption by shifting taxes to the future generations. If economic resources are fully employed, increased consumption necessarily implies decreased savings in a closed economy.

In an open economy, real interest rates and investment may remain unaffected, but the fall in national saving is financed by higher external borrowing accompanied by an appreciation of the

domestic currency and fall in exports. In both cases, net national saving falls and consumption rises accompanied by some combination of fall in investment and exports.

The neo-classical paradigm assumes that consumption of each individual is determined as the solution to an inter temporal optimization problem where both borrowing and lending are permitted at the market rate of interest. It also assumes that individuals have finite life spans where each consumer belongs to a specific generation and the life spans of successive generations overlap.

2.1.3 Keynesian View of Fiscal Deficits

The Keynesian view in the context of the existence of some unemployed resources, envisages that an increase in autonomous government expenditure, whether investment or consumption, financed by borrowing would cause output to expand through a multiplier process. The traditional Keynesian framework does not distinguish between alternative uses of the fiscal deficit as between government consumption or investment expenditure, nor does it distinguish between alternative sources of financing the fiscal deficit through monetization or external or internal borrowing. In fact, there is no explicit budget constraint in the analysis. Subsequent elaborations of the Keynesian paradigm envisage that the multiplier-based expansion of output leads to a rise in the demand for money, and if money supply is fixed and deficit is bond financed, interest rates would rise partially offsetting the multiplier effect. However, the Keynesians argue that increased aggregate demand enhances the profitability of private investment and leads to higher investment at any given rate of interest. The effect of a rise in interest rate may thus be more than neutralized by the increased profitability of investment.

Keynesians argue that deficits may stimulate savings and investment even if interest rate rises, primarily because of the employment of hitherto unutilized resources. However, at full employment, deficits would lead to crowding out even in the Keynesian paradigm. In the standard Keynesian analysis, if everyone thinks that a budget deficit makes them wealthier, it would raise the output and employment, and thereby actually make people wealthier. Unlike the loanable funds theory, the Keynesian paradigm rules out any direct effect on interest rate of borrowing by the government.

2.1.4 Ricardian Equivalence Perspective

In the perspective of Ricardian, fiscal deficits are viewed as neutral in terms of their impact on growth. The financing of budgets by deficits amounts only to postponement of taxes. The deficit in any current period is exactly equal to the present value of future taxation that is required to pay off the increment to debt resulting from the deficit. In other words, government spending must be paid for, whether now or later, and the present value of spending must be equal to the present value of tax and non-tax revenues. Fiscal deficits are useful devices for smoothening the impact of revenue shocks or for meeting the requirements of lumpy expenditures, the financing of which through taxes may be spread over a period of time. However, such fiscal deficits do not have an impact on aggregate demand if household spending decisions are based on the present value of their incomes that takes into account the present value of their future tax liabilities.

Alternatively, a decrease in current government saving that is implied by the fiscal deficit may be accompanied by an offsetting increase in private saving, leaving the national saving and, therefore, investment unchanged. Then, there is no impact on the real interest rate. Ricardian equivalence requires the assumption that individuals in the economy are foresighted, they have discount rates that are equal to governments' discount rates on spending and they have extremely long time horizons for evaluating the present value of future taxes. In particular, such a time horizon may well extend beyond their own lives in which case they save with a view to making altruistic transfers to take care of the tax liabilities of their future generations.

2.1.5 Public Infrastructure & Private Investment: Transmission Channels

Public infrastructure investment can affect private investment through various channels. It is convenient to classify these channels into two broad sets of effects: crowding-in and crowding-out effects (direct effect), and output and relative price effects (indirect effect).

The complementarity (crowding-in) effect view asserts that if government expenditure is geared towards public capital in infrastructure instead of non-infrastructure may stimulate private physical capital formation by raising the marginal productivity of private inputs (Argimón et al, 1995).

Alternatively, a complementarity effect between public capital in infrastructure and private investment may operate through adjustment costs thereby raising expected profitability. In a context of economic growth, this idea is found on the availability and the quality of public capital in infrastructure (Turnovsky, 1996). For example, a better integrated road can reduce costs associated with the construction of innovative and new factories or the displacement of heavy equipments. Cohen and Paul (2004) analyze that in many countries, the effect of private investment on unit production expenses and the productivity can be substantial. The above arguments suggest that, by lowering production costs and raising the expected rate of return, public capital in infrastructure may have a strong impact on private capital formation.

Of course, the positive effect of public capital on the marginal productivity of private inputs may hold not only for physical infrastructure but also for social infrastructure capital in education and health, which may enhance the productivity of private inputs -both labour and capital (Agenor et al, 2005). Nevertheless, to the extent that public investment in infrastructure displaces or crowds out private investment, its net positive impact on private capital formation can be highly mitigated (Boopen&Khadaroo, 2009).

In fact, public investment in infrastructure displaces or crowds out private investment if the public sector finances the increase in public investment through an increase in distortionary taxes which may increase incentives for private agents to evade taxation, or reduce the expected net rate of return to private capital, and therefore reduce the propensity to invest (Badawi, 2005). A similar effect on private capital formation may occur if the public infrastructure investment is financed through borrowing on domestic financial markets by driving interest rates up (in countries where market forces are relatively free to operate) or increasing the incidence of credit rationing to the private sector; therefore, minimizing the private sector‘s ability to access to monetary markets (Dehn, 2000).

In addition to this, if the increase in public infrastructure investment is paid for by borrowing on external financial markets, according to Boopen&Khadaroo (2009) this debt burden can have a negative effect on investment through each of the following three channels. First, there may be a reduction in investible resources as debt service requires external financing, leads to. Second, the anticipated tax associated with future debt service hampers the anticipated return on investment.

Third, as Serven and Solimano (1993) argued, uncertainty about policies needed in the future to meet an equally uncertain debt service also tends to depress investment. The implication of the above theoretical literatures is that, by raising the cost of capital and negatively affecting expected after-tax rates of return on private capital, this increase may have a compounding effect on private investment. Therefore, private investors may revise downward their investment plans because of anticipated hikes in tax rates to cover the increase in government investment.

Through changes in output and relative prices, public investment and capital in infrastructure may also affect private capital formation indirectly. As noted earlier, Easterly and Rebelo (1993) have argued that public capital in infrastructure may increase the marginal productivity of existing factor inputs (both capital and labor), thereby lowering marginal production costs and increasing the level of private production.

Public infrastructure can also affect private investment indirectly through its flow effect on the price of domestic consumption goods relative to the price of imported goods, that is, the real exchange rate. An increase in public investment in infrastructure for instance will raise aggregate demand and domestic prices (in addition to stimulating output). In the eventuality that nominal exchange rate does not depreciate fully to offset the increase in domestic prices it is likely that the domestic-currency price of imported consumption goods will fall in relative terms (real exchange rate appreciation), thereby stimulating demand for these goods and dampening domestic activity (Boopen&Khadaroo, 2009).

The net effect on output may be positive or negative, depending on the intra-temporal elasticity of substitution between domestic and imported goods. If this elasticity is low (as one would expect in the short run), the net effect on output may be positive, so that private investment may indeed increase (Agenor et al, 2005).

In addition, public investment in infrastructure may affect private investment through both demand- and supply-side effects on output. On the demand side, the increase in domestic prices may lower private sector real wealth and thus expenditure; if this effect is sufficiently large (relative to the increase in public spending) to entail a fall in domestic absorption, firms may revise their expectations of future demand and lower investment outlays, through a ―reverse accelerator effect (Boopen&Khadaroo, 2009).

On the supply side, the real appreciation may lead to a shift in resource allocation toward the non-tradable goods sector, thereby stimulating investment in that sector and depressing capital formation in the tradable goods sector. So, the net effect may thus be uncertain. There may be an increase in private investment if the nominal exchange rate does not depreciate fully in response to the increase in domestic prices which implies a fall in the real cost of imported intermediate inputs. (Agenor et al, 2005).

The above theoretical linkages of public infrastructure and private investment implied that, the net effect of public investment on private investment is an empirical question, since public infrastructure investments plays many competing and offsetting roles in its effect on the investment activities of the private sector.

2.1.6 Public Expenditure Growth Theories

2.1.6.1 Musgrave and Rostow Theory of Public Expenditure

Musgrave and Rostow put forward a development model under the causes for growth in public expenditure. They argued that public expenditure is a prerequisite of economic growth. The public sector initially provides economic infrastructure such as roads, railways, water supply and sanitation.

According to this theory at the early stages of economic development there exists market failures and hence there should be robust government involvement to deal with these market failures. The rate of growth of public expenditure will be very high, because government provides the basic infrastructural facilities.

Rostow's claims are that once the economy reaches the maturity stages the mix of public expenditures will shift from expenditures on infrastructure to increasing expenditures on education, health and welfare services.

According to this theory three stages in the development process could be distinguished:

a. The early development stage where considerable expenditure is required on education and on the infrastructure of the economy (also known as social overhead capital) and

where private saving is inadequate to finance this necessary expenditure. In this stage, government expenditure must thus be a high proportion of total output.

b. The phase of rapid growth in which there are large increases in private saving and public investment falls proportionately; and
c. High income societies with increased demand for private goods which need complementary public investment.

2.1.6.2 Wagner Theory of increasing Public Expenditure

Wagner Theory is also known as the law of increasing state spending. This law viewed public expenditure as behavioral variable that positively responds to the dictates of a growing economy. Wagner's Law states that the government expenditure grows at a faster rate than that of national income. The law predicts that the development of an industrial economy will be accompanied by an increased share of public expenditure in gross national product.

According to Wagner, expenditure is an endogenous factor or outcome of growth process during industrialization. As real national income increases there is a tendency for the public expenditure to increase relative to national income.

The theory states that there is a functional relationship between the growth of an economy and the growth of the government activities; so that the government sector grows faster than the economy. Wagner's law states that, as per capita income of an economy grows, the relative size of public expenditure grows; the relative size of public expenditure grows along with it. (Samson, 2013)

As the economy grows, there will be increase in the number of urban centres, with the associated social vices such as; crime, which require the intervention of the government, to reduce such activities to the minimum. Large urban centres also require internal security, to maintain law and order. These interventions by the government have cost, leading to increase in public expenditure in the economy.

2.1.6.3 The Peacock and Wiseman Theory

This theory deals with the growth of public expenditure. It was put forth by Wiseman and Peacock in their study of public expenditure in UK for the period 1890-1955. It emphasizes the recurrence of abnormal structures which cause sizable dumps in public expenditure and revenue.According to this theory the increase in public expenditure doesn't follow any smooth and continuous trend but the increase in public expenditure occurred in step like manner (Greg and Agboro, 2014).

This theory states that

a. "The rise in public expenditure greatly depends on revenue collection. Over the years, economic development results in substantial revenue to the governments, this enabled to increase public expenditure".
b. There exists a big gap between the expectations of the people about public expenditure and the tolerance level of taxation. Therefore, governments cannot ignore the demands made by people regarding various services, especially, when the revenue collection is increasing at constant rate of taxation.
c. During the times of war, the government further increases the tax rates, and enlarges the tax structure to generate more funds to meet the increase in defence expenditure. After the war, the new tax rates and tax structures may remain the same, as people get used to them. Therefore, the increase in revenue results in rise in government expenditure.

2.2 Empirical Literature Review

Many studies of the relationship between fiscal policy and growth were conducted before the relevant endogenous growth models were developed, i.e. from the early 1980s.For example, Landau (1983) using cross-sectional data from 104 countries found a negative relation between public consumption as share of GDP and growth per capita using Summers-Heston data, while Kormendi-Meguire (1985) using cross-section/time series data for 47 countries found no statistically significant relation of the same variables for the post-World War II period.

Barro (1989), with data from 98 countries in the post-World War II period, found that government consumption decreases per capita growth, while public investment does not affect

growth. Levine-Renelt (1992) found that most results from earlier studies on the relationship between long-run growth and fiscal policy indicators are fragile to small changes in the conditioning set.

In the next generation of studies, Easterly-Rebello (1993) (ER from now on) used cross-section data for 100 countries for 1970-1988 and panel data for 28 countries for1970-1988. They found that public transportation, communication and educational investment are positively correlated with growth per capita and aggregate public investment is negatively correlated with growth per capita, although they admitted that many fiscal policy variables are highly correlated with initial income levels and fiscal variables are potentially endogenous.

Cashin (1995) estimated a positive relationship between government transfers, public investment and growth and a negative one between distortionary taxes and growth from panel data for 23 developed countries between 1971and 1988. Devarajan et al (1996) showed that public current expenditures increase growth, whilst government capital spending decreases growth in 43 developing countries over 1970-1990. Kneller et al. (1999, 2001) showed that the biases related to the incomplete specification of the government budget constraint present in previous studies are significant and after taking them into account, they found for a panel of 22 OECD countries for 1970-1995 that: (1) distortionary taxation hampers growth, while non-distortionary taxes do not; (2) productive government expenditure increases growth, while non-productive expenditure does not; (3) long-run effects of fiscal policy are not fully captured by five-year averages commonly used in empirical studies.

Poot (2000) in a survey of published articles in 1983-1998 did not find conclusive evidence for the relationship between government consumption and growth, while he found empirical support for the negative effect of taxes on growth. Also, he reported a positive link between growth and education spending, while the evidence on the negative growth impact of defense spending is moderately strong. Finally, Poot presented evidence of a robust positive association of infrastructure spending and growth. Easterly (2005) found a significant growth effect of budget balance, which disappeared when extreme observations were excluded from the analysis.

De Castro (2004) investigated the effect of fiscal policy in Spain, and found that shocks to government expenditure boosts GDP, private consumption and investment, with multipliers close

to one in the short term and negative in the medium and long term. Easterly and Schmidt-Hebbel (1993) studied ten developing countries and provided the evidence that fiscal deficits and growth are self-reinforcing and that good fiscal management preserves access to foreign lending and avoids the crowding out of private investment. However, the evidence by Gemmel (2001) from low income, medium and high income countries contradicts most of the earlier evidences on the impact of budget deficits on growth. The result revealed significantly negative effect of budget deficit on economic growth.

Perotti's (2004) study of five OECD countries revealed that the effect of fiscal policy on GDP tends to be small, and the effects of government spending shocks and tax cuts on GDP and its components have become substantially weaker over time.

Mountford and Unilg (2005) stressed that the best fiscal policy to stimulate the economy is a deficit-financed tax cut and that the long-term costs of fiscal expansion through government spending is probably greater than the short-run gain.

M'Amanja and Morrissey (2006) conclude that unproductive expenditure and non-distortionary tax revenue were found to be neutral to growth predicted by economic theory. However, contrary to expectations, productive expenditure has strong adverse effect on growth, while there was no evidence of distortionary effects on growth of distortionary taxes. On the other hand, government investment was found to be beneficial to growth.

Again, the empirical work of Hsieh and Lai (1994) on seven industrialized countries suggests that the relationship between government spending and growth can vary significantly across time as well as across the major industrialized countries that presumably belong to the same growth club. For most of the countries under study, public spending is found to contribute, at best, a small proportion to the growth of an economy.

Benos (2004) studied OECD countries and found that government spending on education, health and fuel-energy display a hump-shaped relationship with per capita growth and public expenditures on housing, community amenities, social security, social assistance, transport and communication are characterized by U-shaped relationship with growth. Also when the effect of public spending on education and social expenditures on growth is stronger, the poorer a country

is, while the opposite is true for expenditure on health. Finally, the study found that budget surplus has a positive effect on growth.

Keynesian theory tested by several academic studies. The study on low-income countries conducted by Gupta et al (2005) resulted with positive impact of budget deficit on economic growth both on the short run and on the long run. They also estimated the impact of productive and non-productive budget expenditure on economic growth. They found out those countries which have a budget deficit but they spent public expenditure to non-productive expenditures have very limited economic growth but countries with higher public expenditure for productive expenditure have higher economic growth rate. In both cases they found out that an acceptable budget deficit will result with a positive causal relationship.

Bose et al (2007) conducted a panel data for 30 developing countries and they found out that if the budget deficit is a result of productive spending then the budget deficit will have positive impact on economic growth. Odhiambo et al. (2013) found out that there is a positive relationship between budget deficit and economic growth by using causality techniques.

A variety of studies on the same issue concluded with no significant relation between budget deficit and economic growth. Velnampy and Achchuthan (2013) analyzed the impact of fiscal deficit on economic growth for Sri Lanka and they found no significant relation. Rahman (2012) found out that there is no relation between economic growth and budget deficit in the long run, however they found out that there is a positive relation between increase at productive budget expenditure and economic growth.

Kneller *et al* (1999) found out that there are various impacts of budget deficit on economic growth due to the source of budget deficit. If budget deficit is a result of minimization of distortionary taxes or increase at productive public expenditure economic growth will be positively affected. But if the deficit is because of non-productive public expenditure, the economic growth will be affected negatively.

2.2.1 The Relationship between Budget Deficit and Economic Growth

Budget deficit or budget surplus is one of the most important macroeconomic factors that have an impact on economic growth (Fischer, 1993). But it is possible to say that budget deficit or

surplus is a result of fiscal policy instrument of a government. As Fischer (1993) indicated, it is not easy to use budget deficit as a representative of fiscal policy or to estimate the impact of fiscal policy effect by using only budget deficit. It is one of the most reliable and effective indicator which has an impact on economic growth. On the other hand budget deficit has an impact on all the macroeconomic variables and at the same time macroeconomic indicators have an effect on budget deficit or budget balance (Odhiambo *et. al*., 2013). It is indicated by many studies that there is a relation between budget deficit and economic growth; however the impact of budget deficit on growth is directly related according to the source of budget deficit (Kneller *et. al*., 1999). Mainly increase at productive spending and non-productive spending which could result with budget deficit would have different impact on economic growth.

There are lots of studies which analyzes the relationship between budget deficit and economic growth by using different methods. The theoretical roots of the macroeconomic perspective are based on two controversial approaches which explain the relation between budget deficit and economic growth. The neo-classical approach supports the idea that there is a negative relationship and Keynesian theory claimed that there is a positive relationship between budget deficit and economic growth (Rahman, 2012). The two main perspectives are reflecting different opinions as they have different theoretical background.

Budget deficits would not increase aggregate demand therefore in the short run the relation between budget deficit and economic growth will be neutral (Bittante, 2013).Both Keynesian and Neoclassical theories were tested with various studies for different countries by using empirical methods. However it is not difficult to say that many studies conclude with support to neo-classical approach. It is not possible to include every single study in detail but after explaining the leading studies we tried to summarize all the relevant studies according to their method, theory hypothesis and findings.

Starting from literature that concluded with support to neo-classical theory Adam and Bevan (2005) found out that 1.5% decrease in budget deficit as a percent of GDP will have positive impact on economic growth. This reverse causal relationship was also supported by Fischer (1993). Fisher in his cross sectional growth regression found out that there is a negative relation between inflation, budget deficit and economic growth.

In his study Fischer (1991), used Levine-Renelt growth model to analyze the impact of macroeconomic variables on economic growth and he found out that budget deficit is negatively associated with per capita growth. Easterly and Rebelo (1993) in their cross-sectional panel data analysis specified the productive spending with spending on transport and communication.

The same study also found out that budget surplus is correlated with growth and they connected this with high budget deficits and will have negative impact on economic growth. Similar to Fisher (1993) this study explained the negative relation of budget deficit and economic growth with budget deficits will result with instable macro economy.

Persistent budget deficits have increased the interest of economists in theories and evidence about fiscal policy. The explanations of the impact of budget deficits on the economy vary across different schools of thought. The neoclassical theory illustrates an inverse relationship between economic growth and budget deficit, because persistent deficits crowd out private investment. Siddiqui and Malik (2001) state that the impact of budget deficit on GDP ratio is expected to negatively crowd out public saving.

However, the Keynesian school views that a budget deficit will achieve a national income improvement and need not crowd out private investment, if the resources in the economy are initially under-employed. In contrast, the Ricardian school views a budget deficit as merely postponing tax, and having no real effect.

2.2.2 The Relationship between Public Sector Expenditure and Economic Growth

Macroeconomic theory suggests that public sector expenditure should have a positive impact on economic growth. Supporting this theory, Freeman and Webber (2009) find that the productive type of public service expenditure in education and health can lead to long-term economic returns. For instance, educational expenditure would have a direct impact on the improvement of social welfare. When society benefits from the educational programs it would contribute significantly to increased labor productivity; as a result, high economic growth is achieved.

On the other hand, if the majority of government expenditure is channeled to unproductive types of expenditure, it may cause a decline in economic growth Teles and Cesar Mussolini (2014). The unproductive types of public expenditure are subsidies, and pensions, etc.

The role of public investment in the process of economic growth has been the subject of enquiry of a growing body of both theoretical and empirical literature. The starting point for both strands of literature is the notion that actions taken by governments have considerable effect on macroeconomic performance. For example, the level of public investment may affect both private investment and the long-term rate of growth. The fact that public investment is largely non-excludable and nonrival in consumption suggests spillover effects, and this is emphasised by the endogenous growth models including Romer (1986) and Barro and Salai-i-Martin (1999). These models allow for the possibility of external effects through which public investment can have an effect on economic growth.

Empirical studies have used various approaches to investigate the role of public investment in the process of economic growth. Using a production function approach, Ebert (1986), Costa, *et al.* (1987) and Deno (1988) find public investment to be a significant input in the production process and private and public investments to be complementary, rather than substitutes.

Milbourne, Otto and Voss (2003), using an extension of Mankiw, Romer and Weil's augmented Solow-Swan growth model, examine whether public investment has a distinct role as a determinant of economic growth. The study considers both the predictions of the model in steady state and in transition to steady state. For the steady state model, there is no significant effect from public investment on the level of output per worker. Using standard ordinary least squares (OLS) methods for the transition model, it observes a significant contribution to economic growth from public investment.

In an influential study, using annual data for the period 1949 to 1985 for the United States, Aschauer (1989a) finds a strong positive relationship between productivity and the ratio of the public to the private capital stock. Tatom (1991) question the findings of Aschauer on the basis

of non-stationarity of the time series data which may yield spurious correlation between the public capital stock and output growth.

Khan (1996) explores the relative importance of public and private investment in promoting economic growth for a large group of developing countries. The results of the study show that private and public investment has a differential impact on economic growth, with private investment having a much larger impact than public investment. Also, significant regional variations are found in terms of the effects of public and private investment.

Devarajan, Swaroop, and Zou (1996) focus on the composition of public expenditure and show that whereas current public expenditure has positive and significant growth effects, the effect of capital component of public expenditure on per-capita growth is negative. A number of empirical studies have adopted the vector auto-regressive (VAR) approach to examine the relationship between government investment and economic growth. By imposing as little economic restrictions as possible, this modeling technique tries to solve some of the problems inherent in the production and behavioral approaches. An advantage of VAR models is, for instance, that no a priori causality directions are imposed or other identifying conditions derived from economic theory are needed. Indirect effects of public investment are also taken into account.

Using the VAR approach, Sturm (1998) finds that infrastructure investment positively influences output in the Netherlands, and using the same approach to analyse the dynamic effects of public investment for six industrial countries, Mittnik and Neumann (2001) establish that public investment tends to exert a positive influence on GDP. Furthermore, they find no crowding-out effect between public investment and private investment. Naqvi (2002) examines the relationship between economic growth, public investment and private investment using VAR methodology.

Niloy Bose, M EmranulHaque, and Denise R Osborn (2003) examined the growth effects of government expenditure for a panel of thirty developing countries over the decades of the 1970s and 1980s and found that the share of government capital expenditure in GDP is positively and significantly correlated with economic growth, but current expenditure is insignificant.

Khalifa H. Ghali (1997) built an endogenous growth model to untangle the nature of the relationship between government expenditure and economic growth in Saudi Arabia by

examining the intertemporal interactions among the growth rate in per capita real GDP and the share of government spending in GDP. The empirical analysis found no consistent evidence that government spending can increase Saudi Arabia's per capita output growth.

CHAPTER THREE

3. OVERVIEW OF FISCAL POLICY, PUBLIC INVESTMENT AND ECONOMIC GROWTH IN ETHIOPIA

Based on review of relevant government publication documents and policy papers, this chapter provides glimpse of ideas on the state of fiscal policy, public investment and economic growth in Ethiopia as well as their respective policies and strategies. So an attempt has been made to discuss the components of fiscal policy, public investment and economic growth overview in Ethiopia using descriptive analysis.

3.1 Policy Environment and Growth Performance in Ethiopia

This topic discusses the policy and growth performance of Ethiopia during the period under the study.

Ethiopian economic growth performance has undergone different trends in the life of economic cycles. During the 1980s, the Ethiopian economy was characterized by its downward trend. According to Alemayehu (2001), growth decelerated to 2.3 percent (-0.4 percent in per capita terms) between 1974/75 and 1989/90. He argued that the reason for this poor economic performance because nature of Ethiopian economy exclusive dependence on the agriculture sector and negative shocks from political instability, and inappropriate institutions.

The periods 1980/81-1984/85 in Ethiopia's economic history were periods of where manufacturing and agricultural output fall dramatically in which the economy registered 0.9 growth rate on average below zero in real GDP. The main factor accounted for this dismal development is the fact that the country was hit by severe drought and famine, and establishment of large military establishment which absorb 40 to 50 percent of government's expenditure (Ofcansky and Berry, 1991; and Berhanu, 2001). In the period 1985/86−90/91, the economy showed amazing recovery during the period 1985/86 and 1986/87, where real GDP grew at a rate of 11.95 percent on average.

In 1991, Market oriented economic policy is advocated by the EPRDF upon removal of military regime through military action and new paradigm in economic policy formulation started. The new regime began to carry out liberalization under the World Bank (WB) and International Monetary Fund (IMF) policy prescriptions in a typical Structural Adjustment Program (SAP) packages. This policy promoted domestic private sector and opened the door to foreign investors, except in the financial industry (Alemayehu, 2001). The Ethiopian Privatization Agency (EPA) was also established and privatization program started in 1994 so as to give the private sector a room to play a significant role in the country‘s development.

Poverty reduction is the core objective of EPDRF economic policy architecture. To accelerate the reduction of poverty in the most effective way, the government chosen growth strategy, named Agricultural Development Led Industrialization (ADLI) (SDPR, 2002). The primary objective of ADLI is to make a strong interdependence between agriculture and industry by increasing farmer‘s productivity, expanding private commercial farms, and reconstructing the manufacturing sector. ADLI is seen as a long-term strategy to achieve faster growth and economic development by making use of technologies that are labour using, but land augmenting, such as fertilizer and improved seeds and other cultural practices (Tadesse, 2011).

In the first decade of the EPRDF regime, from the period 1991/92 to 2000/01, the economy bounced back to good growth track, except the year 1998- primarily due to the severe drought and conflict with Eritrea. In this decade the real GDP and per capita GDP grew at an average annual rate of 4.8 percent and 1.9 percent, respectively. The economy would have registered above this growth rate if the country did not at war with Eritrea in 1998, where the real GDP and per capita GDP grew at a rate of 1.4 percent and 4.3 percent below zero, respectively (Tadesse 2011).

The next two consecutive years (year 2001/02 and 2002/03) again the Ethiopian economy has deteriorated. In the period 2001/02 the real GDP grew at a rate of 1.6 percent, but in the year 2002/03 the real GDP increased at a rate of 2.1 percent below zero. The actual reason for this slothful economic growth is that the economy has been adversely affected by the drought that severely hit Ethiopia in 2001/02 and 2002/03 – the worst since 1984/85. This was accompanied by a sharp decline in agriculture production (Getahun, 2004). This shows how the overall

economic growth of Ethiopia has been highly associated with the performance of the agriculture sector, which is highly dependent on natural rain.

According to Alemayehu (2001), good macro performance will not be sustained if the country continues to depend on rain fed agriculture sector. Furthermore, he showed that dependence on rain-fed agriculture had negative multiplier effect on production levels in subsequent years if there is a shock (drought) in one period because the drought not only deprived peasants current income but also his wealth (for example farmers may be forced to sell oxen), leading to a decline in output in the next agricultural season.

Ethiopia has experienced very strong economic growth over the past decade. Economic growth averaged 10.9 per cent per year between 2003/04 and 2012/13, compared with the Sub-Saharan average of 5.4 per cent. Impressive achievements were also made in social development, especially in the expansion of health and education services. However, given Ethiopia's low starting base, the gains made so far have neither resulted in the full transformation of the economy nor in the society-wide transformation of well-being (UNDP report 2014).

3.1.1 Trends in Economic Performance

At the centre of the country's strong economic performance has been the Government's proactive and forceful role in shaping socio-economic policy. In pursuit of its goal of making Ethiopia a middle-income country by the year 2025, the Government has been investing heavily in economic and social infrastructure, streamlining public services, revamping the tax collection system, and supporting small and medium enterprises. It has also prioritized key sectors such as industry and agriculture, as drivers of sustained economic growth and job creation. The most recent data, for 2012/13, reveal that GDP registered a growth rate of 9.7per cent; this was accompanied by an increase in the domestic savings rate backed by a prudent fiscal policy, helping to contain the budget deficit at 2 per cent of GDP.

The period 2003/04 to 2009/10 has shown quite impressive economic growth. Real GDP and per capita GDP grew nimbly at an average annual rate of 11.3 percent and 8.3 percent respectively for the last seven consecutive years, which is the highest among the non-oil producing economies of Africa. However, following the recovery commencing in 2003/04, growth has been very much sustained and complemented by strong performance in the construction,

manufacturing, trade and tourism, banking and insurance, and real estate sectors/sub-sectors. The construction sector has been spurred by the much needed public sector investment in infrastructure (roads, rural infrastructure development including food security, telecom, power, irrigation, etc.) and private sector expansion as well (World Bank 2014).

The Government of Ethiopia‘s current five-year development plan (2010/11-2014/15), the Growth and Transformation Plan (GTP), is geared towards fostering broad-based development in a sustainable manner to achieve the Millennium Development Goals (MDGs). The GTP envisions a major leap in terms of not only economic structure and income levels but also the levels of social indicators. During the first year of GTP implementation (2010/11), the country has registered 11.4 percent real GDP growth rate surpassing the GTP target of 11 percent. Particularly, the agriculture and industry sectors have registered growth rates above their targets set for the year. Clearly, more effective implementation of prudent macroeconomic and sectoral policies has contributed to this faster and broad-based growth (MoFED, 2012).

Table 1 Key Macro Indicators

	2004/05	2010/11	2011/12	2012/13
GDP growth (%)	12.6	11.4	8.8	9.7
Agriculture	13.5	9.0	4.9	7.1
Industry	9.4	15.0	17.1	18.5
Services	12.8	12.5	11.1	9.9
Saving as % of (GDP)	9.5	12.7	15.0	17.7
Investment (as % of GDP)	26.0	27.9	33.1	33.0
Fiscal deficit (as % of GDP)	4.6	1.6	1.2	2.0

Sources: MoFED and NBE.

Measured by real GDP, the Ethiopian economy grew by 8.8 per cent and 9.7 per cent in the fiscal years 2011/12 and 2012/13, respectively. Although these growth rates show a decline compared

with the 11 per cent average growth for the previous eight years, they remain relatively robust. In fact, Ethiopia was the 12th fastest growing country in the world in 2012 (World Bank, 2013).

The relative decline in the rate of growth is primarily the result of a slowdown in growth in the agriculture sector, from 9 per cent in 2010/11 to 4.9 per cent in 2011/12 and onward strengthening to 7.1 per cent in 2012/13. This has significantly reduced the contribution of the agriculture sector to the overall growth of the economy. Ethiopia's capacity to address poverty, food insecurity and various other socio-economic problems is highly dependent on the performance of agriculture.

There are also other concerns, despite the impressive achievements. These include specific trends and shortfalls, such as the widening gap between domestic savings (17.7 per cent of GDP in the most recent year) and investment (33 per cent), as indicated in Table 1. There is a need to deepen the mobilization of domestic savings. The fact that fiscal deficit as percentage of GDP shows a rising trend, especially in light of the significant role of state-owned enterprises in large-scale borrowing, warrants close attention. In particular, the greatest possible efforts should be made to ensure that large-scale public enterprise investments generate the expected returns in future.

During the second year (2011/12) of GTP implementation, real GDP grew by 8.8 percent. In 2012/13, the GDP grew by 9.7 percent in real terms. Though the 9.7 percent growth performance registered in 2012/13 is below the 11.3 percent target set for the fiscal year under review, it was achieved under difficult domestic and global environment. Furthermore, the 2012/13 low real GDP growth was achieved due to the fall in prices of Ethiopia's major export commodities such coffee and gold while prices of its major import items such as fuel continued to be high. On the other hand, the 2012/13 economic growth was high compared to the sub Saharan average performance of around 5 percent. The performance was also above the 7 percent growth requirement set to achieve the Millennium Development Goals (MDGs). In general, Ethiopia's economic performance in 2012/13 was widely regarded as one of the fastest growth rates in the world by different international financial institutions (MoFED, 2014). Moreover, the country's Real GDP expanded by 10.3 percent in 2013/14 ((World Economic Outlook Update, July 2014).

3.1.2 Factors Affecting Growth

Ethiopia's growth reflects a mix of factors. Private consumption and public investment have driven demand side growth, with the latter assuming an increasingly important role in recent years. For example, soaring public investment explains most of the 2011/12 growth (about two-thirds), with private consumption accounting for about one third (World Bank, 2013).

On the supply side, economic growth was driven by growth of the services and agricultural sectors, while the role of the industrial sector was relatively modest. Other factors and policy decisions have played a part in influencing the direction and pace of the economy. These include: political stability; the absence of war and civil strife; favorable weather (no severe drought except in 2011); external inflows (foreign direct investment, aid, and remittances); and a series of significant reforms in the areas of price deregulation, privatization, trade, exchange rate policy, public sector management, and debt relief.

Strong political commitment on the part of the Government set the stage for a well-conceived policy and planning process. Growth was supported by consistent resource mobilization and allocation in line with carefully prepared development plans, institutional reform, agricultural modernization, the development of new export sectors, strong global commodity demand, and government-led development investments (UNDP 2014).

Sectoral Shares in GDP and Contributions to Growth

The agriculture sector, which is known for long as the main source of growth, is gradually shifting its position to the services sector. The share of agriculture in GDP fell from 52 per cent in 2004/05 to 43 per cent by 2012/13, while the share of the services sector increased from 37 to 45 per cent during the same period, as shown.

Table 2 Sectorial Percentage Share of GDP

Sectors	2004/05	2012/13
Agriculture	52	43
Industry	11	12
Services	37	45
Total	100	100

Source: Compiled from MoFED data.

Table 2 shows that the services sector has now overtaken agriculture as the largest sector, while the share of industry in GDP has remained more or less constant. By 2012/13, the services sector, spearheaded by the wholesale and retail trade subsectors, accounted for 45 per cent of GDP. Similarly, nearly 54 per cent of the growth in 2011/12 and 46 per cent in 2012/13 was attributed to the growth in the services sector (Table 3 Below). The fact that the share of the industrial sector in GDP, and its contribution to growth, has remained low is a source of concern, however.

The share of the services sector in GDP has been rising, while that of agriculture has been declining steadily (Table 3)

The agriculture sector's share of GDP declined by three percentage points between 2003/04 and 2008/09 and has now been surpassed by services. This impressive growth in services was driven by the rapid expansion in financial intermediation, public administration and retail business activities. These services sub-sectors grew by more than 10 percentage point in GDP share during the past five years. The manufacturing sub-sector contributed less than 4 percent of GDP growth in 2008/2009. The low share of the manufacturing sector, a crucial sector in transforming an economy, is a concern for the Ethiopian Government (AfBD 2010).

Table 3 Sectorial Contribution to GDP Growth

Sectors	2004/05	2012/13
Agriculture (%)	54.7	31.0
Industry (%)	7.8	23.4
Services (%)	37.5	45.6
Total (%)	100.0	100.0

Sources: Compiled from MoFED and World Bank sources.

The sources of growth in Ethiopia have gradually over the decade from agriculture to services.

On the demand side, public investment has become the dominant growth engine in recent years. On the supply side, Ethiopia's recent high growth has been more the result of expansion in the services sector than the agriculture sector. The services sector is now larger than agriculture in terms of value added. The contribution of the agriculture sector to growth has declined from an average of 37 per cent during 2005/06-2009/10 to 31 per cent in 2012/13.

Despite the growing share of the services sector, agriculture remains the key sector of the economy, on which the great majority of the population still depends for its livelihood. The total agriculture value added (in constant price) increased by 82.9 per cent between 2004/05 and 2012/13. This is the result of wide ranging Government programmes targeted at improving the performance of the sector. For example, the number of agricultural extension beneficiaries grew from 10.56 million in 2011/12 to 11.66 million households in 2012/13, the number of development agents deployed reached 3,201 in 2012/13, up from 2,669 in the previous year.

During this time, agricultural productivity (major food crops) rose from 1,700 kg /hectare in 2011/12 to 1,780 kg in 2012/13 (CSA, 2013 and MoFED, 2013).

3.1.3 Macroeconomic Policy Environment

Ethiopia's macroeconomic policies are geared towards ensuring a conducive environment for sustained and broad- based economic growth. The Government is well aware that maintaining macroeconomic stability is a pre-requisite for sustainable and broad-based growth.

As noted previously, Ethiopia has achieved an annual average economic growth rate of over 10 percent in the past decade. All the main economic sectors played a part in this growth, which helped to reduce the incidence of poverty from 38.7per cent in 2004/05 to 26 per cent in 2012/13.

A prudent fiscal policy stance has been pursued, focusing on reducing domestic borrowing while maintaining strong public investment in physical and social infrastructure, mainly on the basis of significant domestic resource mobilization.

Domestic revenue collection has been improving in the past several years owing to vigorous tax reform, improved tax administration, and trade facilitation efforts. Tax collection has on average increased by 35.8 per cent annually since 2006/07 (MoFED, 2014). The fiscal deficit remains low, at below 2 per cent of GDP, but the tax revenue to GDP ratio also remains low at 12.5 percent in 2012/13 in contrast to an average of over 20 per cent for Sub-Saharan African countries (UNDP 2014).

3.2 Trends in Public Finance

Ethiopia has managed to consolidate its strong track record on fiscal and public expenditure management. For example, the fiscal deficit declined from 8.0 per cent of GDP in 2004/05 to 2 percent in 2012/13, while net domestic borrowing fell from 2.5 to 0.2 per cent of GDP during the same period. In line with the GTP, pro-poor sector spending as a share of the general government budget has increased steadily from 28 per cent in 1999/2000 to reach the target of 70 percent in 2012/13, although it has stagnated as a share of GDP as a result of the containment of total public sector spending as a share of GDP (MoFED, 2014).

The Government has also stressed that coordination between policymaking, planning and budgeting is crucial to raising the efficiency of public expenditure on poverty-oriented sectors.

The fiscal deficit of 2.0 percent of GDP in 2012/13 was kept at a low level as a result of cautious fiscal management. The deficit was largely financed by external borrowing supplemented by a small amount of net domestic borrowing, equivalent to about 0.2 percent GDP (MoFED, 2014).

Ethiopia's public finance management can be characterized as having been prudent: it has kept the budget deficit low, while scaling up expenditures on critical sectors of the economy, particularly infrastructure and pro-poor sectors. Public resource mobilization and investment have increased significantly over the past years. Resource mobilization has been largely domestic-focused and supported by measures taken to improve the tax administration (MoFED 2014).

In 1999/00 government expenditure was around 32 percent of GDP while total government revenue was 19.4 percent of GDP. This clearly indicates that there is an excess of government expenditure over revenue, which leads to huge budget deficit.

As MoFED (2013) represented, the liberalized regime (1992-2012) revealed that the budget deficit has also remained significant even after the introduction of various reform programs during 1992/93.

In simple and brief words, total revenue and expenditure are increasing. However, the increase in latter is much higher than that of the former one and this has created the budget deficit to be widened over time. With respect to government expenditure, up to the period 2007/08 the share of current expenditure to total expenditure is greater than that of capital expenditure.

In recent years capital expenditures and revenue mobilization were increasing. Specifically in 2008 and 2009 revenue collection was improved leading to fall in budget deficit growth rate. Generally fiscal situation of Ethiopia is determined by its capacity to mobilized revenues, whether conditions, external factors (donors‟ response). The deficit indicates the country's dependence on external resources (Tadesse 2011).

It is clearly observed that Table 4 below reveals that both government revenue and expenditure is rising. But the rise in expenditure is greater than that of revenue over the period under consideration. This has brought the issue of deficit to our discussion. Almost for all periods, there was no budget surplus. Despite the rising trend in government revenue, the size of budget

deficit has been increasing. This increase in it is attributed to different factors like narrow tax base, misuse of resources (Corruption) with respect to revenue collection, extended but inefficient bureaucracy of public administration which gave rise to expenditure, etc.

Table 4 Government Revenue Expenditure and Budget Deficit (in Millions of Birr)

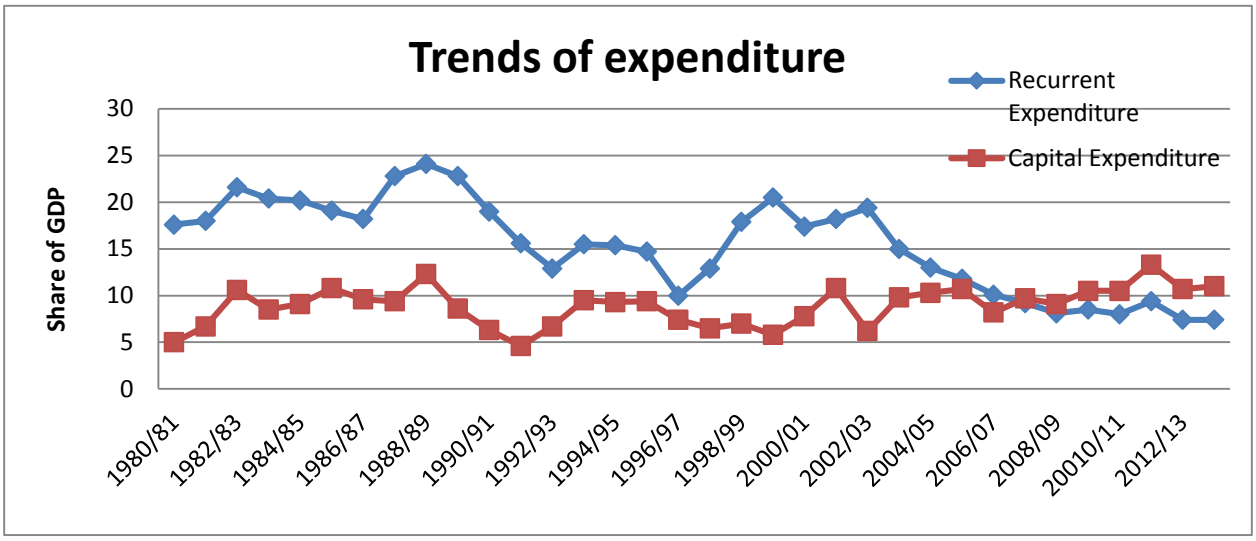
Table 4.Illustrate the burden of GDP by expense on the basis of public expenditures of Ethiopia.

Year	GDP	Public Expenditure	Public Revenue	Budget Deficit	Share of GDP		
					Exp.	Rev.	Deficit
2001/02	65,895.4514	19329.8	11754.3	-8546.5	29.0	15.7	14.8
2002/03	72,702.72055	18801.7	13890.9	-5565.8	25.6	15.9	10.6
2003/04	85,800.03328	21543.5	19521.9	-2293.6	24.9	15.8	9.4
2004/05	105,415.0197	24844.5	20967.1	-3877.5	23.3	14.5	8.8
2005/06	130,333.6837	29558.1	22866.5	-6741.6	22.5	14.5	8.0
2006/07	170,280.4053	31365.7	32204.7	795.0	18.3	12.1	6.2
2007/08	245,836.2772	46915.0	41501.6	-5413.4	18.9	12.1	6.8
2008/09	332,060.1067	57839.1	56036.4	-1802.7	17.2	11.9	5.3
2009/10	379,134.7593	72597.7	61741.0	-10856.7	19.0	12.9	6.1
20010/11	505,646.00	93942.7	85612.0	-8330.7	18.6	13.7	4.9
2011/12	747,326.51	124755.3	115658.0	-9097.3	22.7	18.7	4.0

Source: Own calculation Based on MoFED data

Figure 1 below presents trends of the main categories of expenditure expressed as shares in GDP for the period 1980 – 2012.

Figure 1 Trends of Expenditure (as a share of GDP) for Ethiopia, 1981-2013



Source: Own calculation based on MoFED data

Figure 1 above reveals that the share of government recurrent expenditure averaged between 9% and 24% over the study period while that of capital expenditure has been consistently below 13% throughout the entire period and has actually been falling for most of the 1980s and 1990s. The declining trend in capital expenditure over this period may be attributed to austerity measures imposed on the government by the Bretton woods institutions - either in form of World Bank's structural adjustment programmes or through IMF's stabilization programmes.

Since most recurrent expenditure is all but fixed (salaries and wages, interest on public debt, constitutional offices etc), the only scope the government has in the wake of these austerity measures is its development budget. Thus most of the expenditure cuts have been effected through reductions in development expenditure, which in turn could have contributed to the declining trend of overall government expenditure especially in the 1990s. This is an upsetting trend because capital expenditure is expected to provide the necessary infrastructure for private sector investment and growth and therefore low budgetary allocation on this item means these services have been under-provided. On the other hand, recurrent (consumption) expenditure has remained relatively high (and could have been much higher had we included the debt redemption component) and shows an upward trend in the 1990s.

However, the share of Capital expenditure in GDP took its lion share from 2007/8 onwards. This is so because prior to year 2008, there was less emphasis for public sector investment and most of the government expenditure devoted to its current component. However, from recent years onwards the aim has been given due attention for the public sector developments. Accordingly, the share of capital expenditure has been increasing.

On the other hand, the government spending has been growing rapidly in recent years while prioritizing poverty reduction expenditures in the main sectors of health, education and agriculture. This action has contributed to the rise in budget deficit given the narrow tax base of the country. Starting from 2001, the government has enacted a series of tax reforms to boost tax revenues through improved tax administration and compliance. Even though this has brought some improvements in revenue collection, it still requires necessary action to be taken to fill the deficit by domestic resource.

Table 5 Trend in Pro-poor Spending in Total Public Expenditure (%)

Sector	2004/5	2005/6	2006/7	2007/8	2010/11	2011/12	2012/13
Education	19.8	21.8	23.7	21.3	24.9	23.9	25.2
Health	4.9	4.6	6.6	7.3	6.7	6.2	7.4
Agriculture and food security	15.0	15.2	12.9	11.7	8.8	8.9	9.5
Roads	11.3	12.4	14.1	17.7	19.7	23.2	22.4
Water and sanitation	6.0	6.1	5.7	6.1	6.3	8.2	8.2
Total	57.0	60.1	62.9	64.1	66.4	70.4	70.0

Source: Own Calculation based MoFED data

Domestic revenue collection and external grants (for the federal as well as regional governments) reached Br137.2 billion in 2012/13, from Br20.1 billion in 2004/05 indicating average annual growth rate of over 70 percent.

As indicated in table 4. 6 below, the tax to GDP ratio rose from 11.8 per cent in 2004/05 to 12.5 percent in 2012/13. The Government has been undertaking aggressive tax reform measures in the past decade in terms of institutional arrangements, tax administration and trade facilitation, which resulted in significant increase in tax revenue.

Accordingly tax revenue increased nine fold between 2004/05 and 2012/13. However, the tax to GDP ratio remains low compared to the SSA average of over 20 per cent (UNDP 2014).

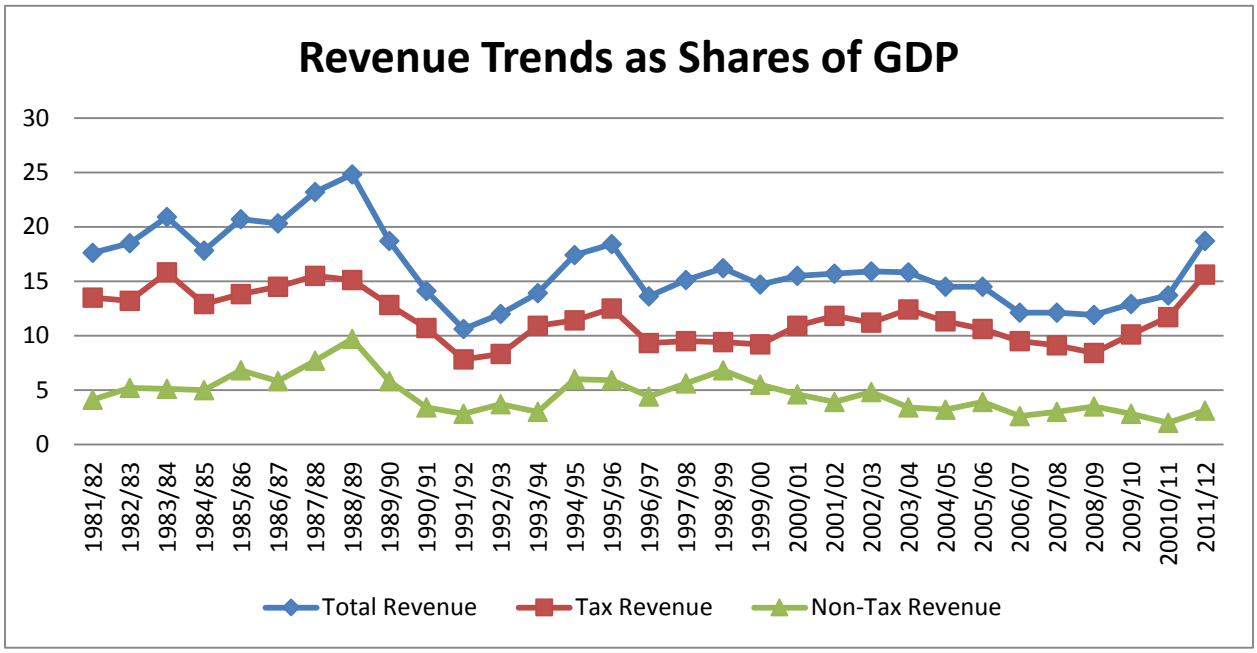
Table 6 Key Public Revenue Indicators

	2004/05	2010/11	2011/12	2012/13
Revenue and grants (Br billion)	20.1	85.6	115.7	137.2
Domestic revenue(Br billion)	15.6	69.1	102.9	124.1
Tax revenue (Br billion)	12.4	59.0	85.7	107.0
Non-tax revenue (Br billion)	3.2	10.1	17.1	17.1
Federal tax revenue (as % GDP)	11.8	11.7	11.6	12.5
Budget deficit (as % GDP)	8.0	4.9	4.0	2.0

Source: Compiled by the author based on MoFED data.

On the revenue side, the major components – direct and indirect taxes – have not kept pace with the growth of expenditure. Figure 2below shows trends in the revenue elements for the period 1981 - 2012. The share of tax revenue in GDP accounts for the bulk of total revenue (15%) followed by non tax revenue (10%).Non-tax revenue includes, *inter alia*,fines, forfeitures, licenses, property income, and privatization proceeds.

Figure 2 Revenue trends as a share of GDP for Ethiopia, 1981-2013



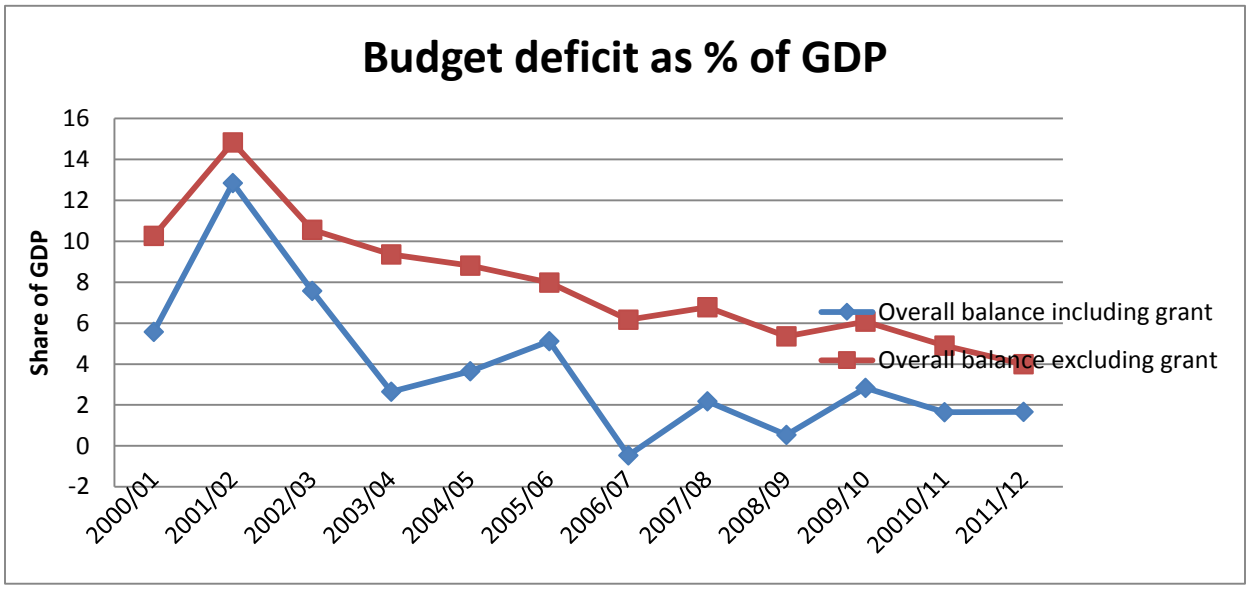
Source: own calculation based MoFED data

In the first half of 2000's, all the components of revenue were increasing due to rising flexibility and elasticity caused by the rapidly growing economy over this period. However, in the second decade, tax revenue increasing and non-tax revenue tapered off. This upsurge of revenue apparent from figure 2 in 2000's which can be attributed to improved tax administration in response to tax reforms started in 2001 as well as increased consumption taxes arising from general election spending blasts of 2005. The implication of the differences in growth rates of expenditure and revenue is a persistent budget deficit over the sample period.

Figure 3shows shares of budget deficit in GDP with and without grants over the study period.

The implication of the differences in growth rates of expenditure and revenue is a persistent budget deficit over the sample period. **Figure 3** shows shares of budget deficit in GDP with and without grants over the study period.

Figure 3 Trends in budget deficit with and without grants (% of GDP)



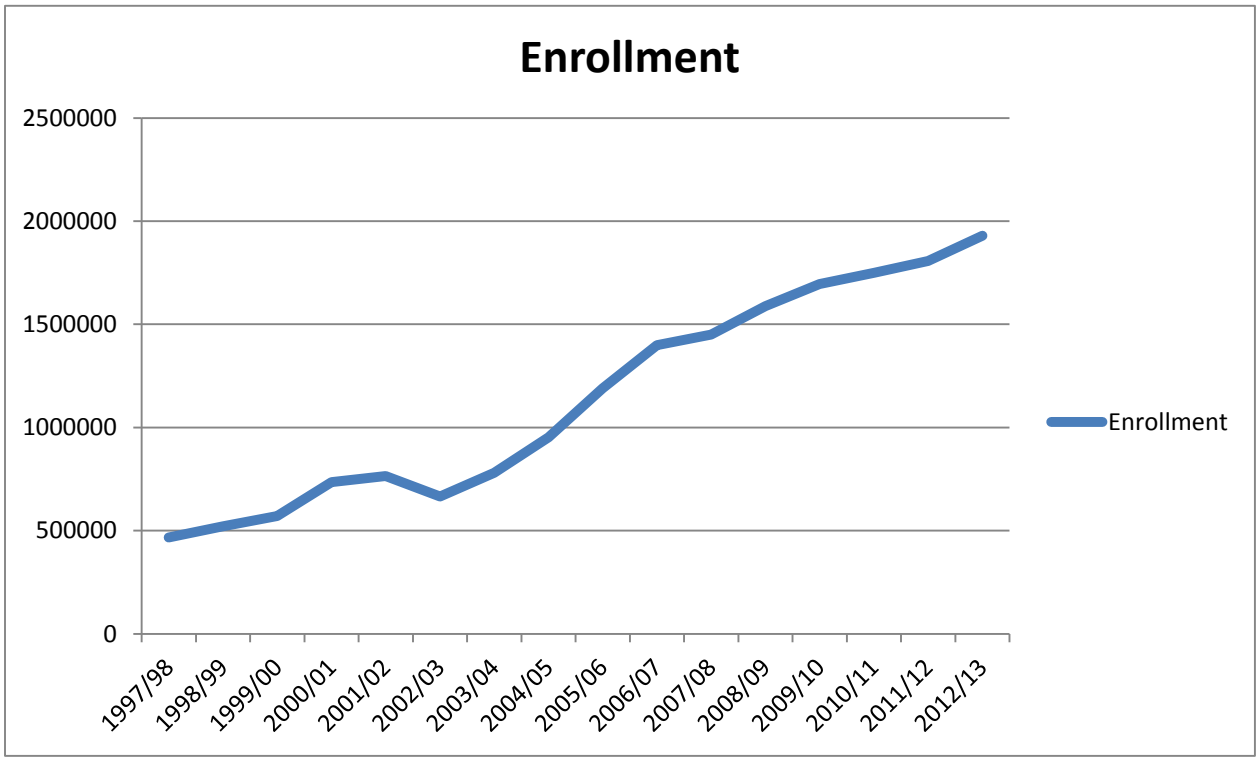
Source: Own calculation based on MoFED data

A notable feature from the above figure is the sharp increase in budget deficit in the 2000 when the share of budget deficit without grants rose from 10% in 2000 to a high of 15% in 2001 before falling gradually to a low of 2 % in 2004. The rise in deficits around this time is partly due to fiscal indiscipline on the side of government and rising public debt obligation.

Among the non-fiscal variables used in this study are private investment (PINV), school enrolment (AENR) and foreign aid in form of grants (AID). Private investment is seen in many countries, including Ethiopia, as the driver of economic growth. However, its measurement and composition has been argumentative in the growth literature. One measure is derived by deducting the government investment (GINV) from gross fixed capital formation (GFCF). Government investment in this study is proxied by capital budget of the government**.**

The other non-fiscal variable covered in this study is school enrolment, which is widely used in the growth literature to proxy for human capital development or growth of labour force. Some researchers use either primary or secondary school enrolment or both to proxy for this variable. In the current study, both actual primary and secondary school enrolment were taken as reported in various publications of the Ministry of Finance and Economic Development (MoFED).

Figure 4 School enrollment trends, 1997-2013



Source: Own Calculation Based on data from World Bank

For economic growth, however, increase in enrolment figures alone may not be enough; quality of schooling and the type of skills taught at school may matter more than mere numbers. As Pritchett (2003) observes, it might be advisable to go beyond 'education is good' for growth and focus more on quality of learning, nature and the dynamism of demand and supply of school graduates.

This study considers foreign aid, which has become an integral part of development planning in most developing countries. The flow of external resources or foreign aid is either from a country to another or from multilateral institutions to a country and comes in many forms (financial, technical assistance, food/commodity and equipment). Foreign aid, if well utilized, can contribute positively to a country's gross saving and investment and ultimately to economic growth.

As a country, Ethiopia is one of the leading countries that have received large sum of foreign aid starting from the late 1940s. This external assistance is transferred to government either through

grant and concessional loan or non-governmental organizations in the form of humanitarian aid for other different purposes. The government of Ethiopia has received foreign aid from both bilateral donors and multilateral donor agencies over years.

In terms percentage contribution of multilateral aid, the authors described that IDA (about 53 percent) had a largest contribution, the UN system (particularly UNICEF and UNDP, with WFP providing substantial emergency relief), the European Union (17 percent), and the African Development Bank (11 percent). They also mentioned that the largest bilateral donors of the country were United States, Japan, Italy, Canada, Germany, the Netherlands, Norway and Ireland.

A summary of the Official Development Assistance (ODA) flows in terms bilateral donors and multilateral donors to Ethiopia from the period 1981-2014 is shown below:

Figure 5 Official development assistance to Ethiopia (in millions of US dollars)

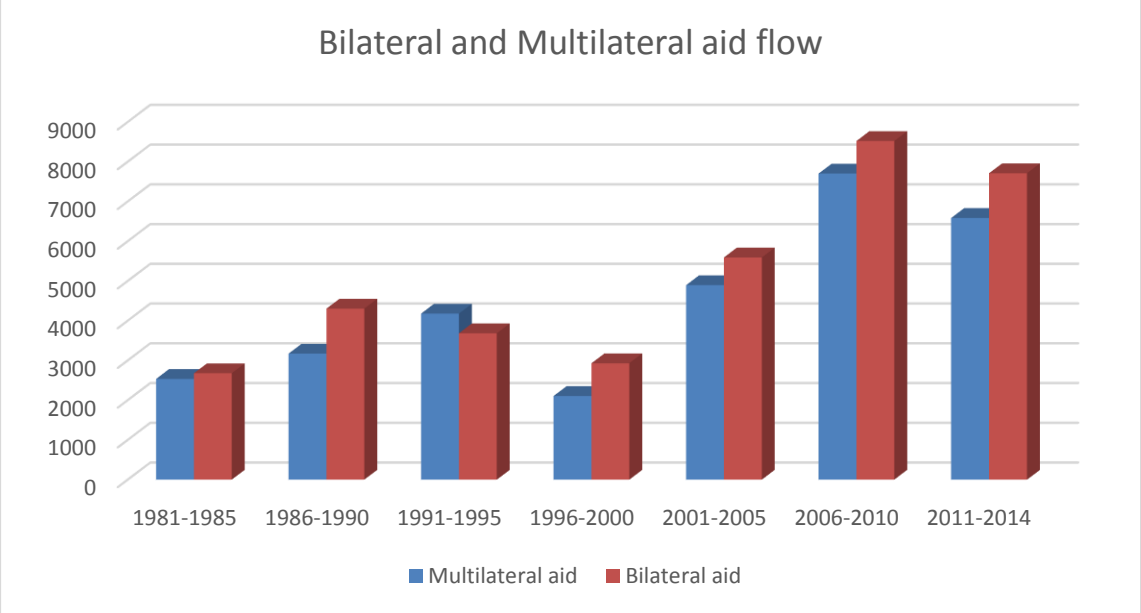
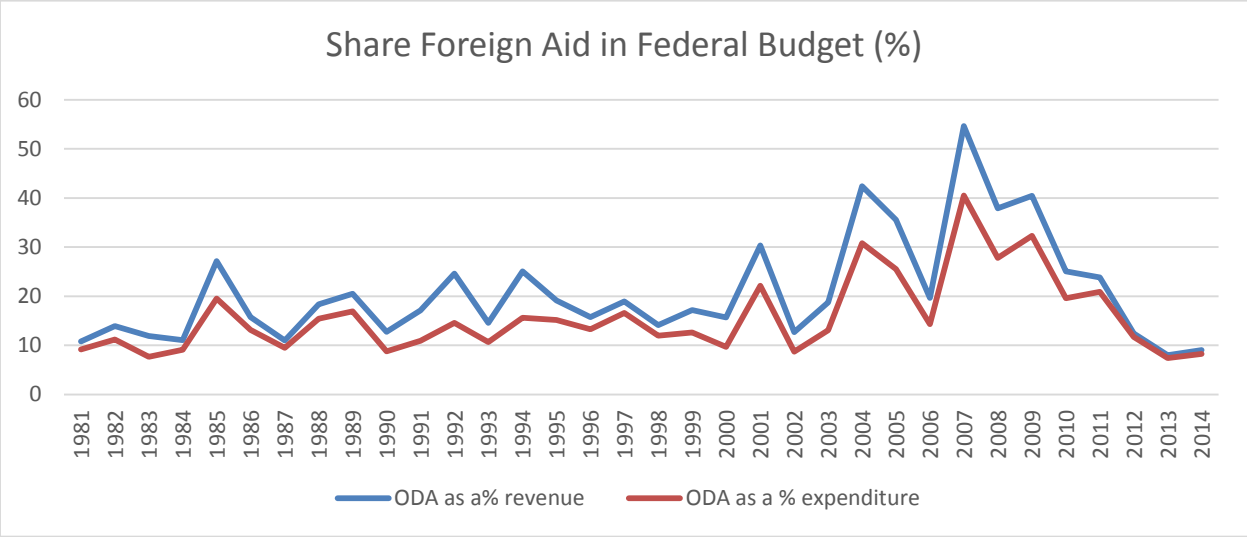


Fig.5. above shows that contrary except from the year 1991-1995; compare to multilateral donors, the bilateral aids has relatively a larger share of ODA flow to Ethiopia. During 2004 fiscal year, both multilateral and bilateral development partners committed a total of $3,155 million through 85 projects in Ethiopia. From the total commitment bilateral donors accounted for 55.1% and the rest 44.9% from multilateral agencies (MoFED, 2013).

The ups and downs in the trend of grants reflect the frosty relationship between the government and donors since the advent of structural adjustment programmes in the 1980s. It has become a ritual: the government turns to donors whenever faced with macroeconomic imbalances and donors on their part pledge their support so long as the government honors agreed conditionalities.

Figure 6 Share of foreign aid in federal budget



Source: MoFED

The above figure illustrates the share of contribution of foreign aid in Ethiopia's federal government budget. It can be easily concluded that the means of financing government budget deficit is from the flow of foreign aid to the country which gives implication that foreign aid remains to be source of government revenue to meet the increasing trends of government expenditure.

CHAPTER FOUR

4. MODEL SPECIFICATION, VARIABLE DEFINITION AND ESTIMATION TECHNIQUE

4.1 Theoretical Issues

The empirical framework for this study involves two models. The first model assesses the impact of fiscal policy on economic growth in Ethiopia. The second model as the government investment takes the largest share of GDP in Ethiopian economy, it is reasonable to investigate the determinants of public investment in Ethiopia pertaining to its effect on the fiscal policy management in Ethiopia. Thus, the second model tests the determinants and driving force of public investment.

The study includes two additional variables (growth of productive and non-productive expenditures) in order to investigate their impacts on the economic growth. It is important to know their relationship since both types of expenditures contributes to the level of fiscal deficit. The productive consumption expenditures include components listed by Ministry of Finance and Economic Development as part of recurrent expenditures such as; agriculture and rural development; trade and industry; transport; education; health as well as housing. Meanwhile, the non-productive expenditures are referring to lump-sum payment paid by the government such as subsidies. Again, theoretical classification of fiscal policy instruments includes the distortionary taxation which includes current taxes on income, wealth, capital taxes, actual social contributions and additionally non-distortionary taxation which is taxes on production and imports.

Mathematical Formulation of the Model

Fiscal policy is expected to affect both the level of per capita output and its growth rate based on endogenous growth theory. A full picture of the means through which fiscal policy affect growth can be found in, amongst others, Barro (1990) and Barro and Sala-i-Martin (1992, 1995). These authors make use of a Cobb-Douglas-type production function with government provided goods and services *(g)* as an input to show the positive effect of productive government spending and the adverse effects associated with distortionary taxes.

The production function, in per capita terms, can be given as follows,

$y = Ak^{1-\alpha}g^{\alpha}$ … . (1)

Where y is per capita output $k$is per capita private capital and A is a productivity factor.

If the government balances its budget in each period by raising a proportional tax on output at rate (τ) and lump-sum taxes (L), the government budget constraint can be expressed as,

$ng + C = L + \tau ny$ … ..(2)

Where n is the number of producers in the economy and C is government consumption, which is assumed unproductive. Theoretically, a proportional tax on output affects private incentives to invest, but a lump sum tax does not. Subject to a specified utility function, Barro (1990) and

Barro and Sala-i-Martin (1992) derive the long run growth rate (γ) in this model as,

$\gamma = \lambda(1-\tau)(1-\alpha)A^{\frac{1}{1-\alpha}}(\frac{g}{y})^{\frac{\alpha}{1-\alpha}} - \mu$ … … … … … … … … … … … … …. (3)

Where λ and μ stand for parameters in the assumed utility function. From (3), it is clear that the growth rate is a decreasing function of distortionary tax rate (τ) and increasing function of productive government expenditure (g) . It is also evident that growth rate is not affected by both non-distortionary taxes (L) and unproductive government expenditure (C). The above specification assumes the government balances its budget each period, an assumption that is unlikely to hold in reality especially in the less developed countries. Empirical model in this study follows Kneller *et al* (1999) and Bleaney*et al* (2000) in which they take a more practical view by assuming a non-balancing government budget constraint in some periods.

Taking this into account, by re-writing (3) to obtain the following expression.

$ng + C + b = L + \tau ny$ ….(4)

Where b is the budget deficit/surplus in a given period. As $g$is productive, its expected sign is positive, but τ is negative as it distorts incentives of private agents. Both $C$and $L$are hypothesized to have zero effects on growth. Similarly, the effect of b is expected to be zero as long as Ricardian equivalence holds, but may be non-zero otherwise (Bleaney*et al*, 2000).

Moreover growth is specified by equation as of Kneller *et al* (1999) by considering both fiscal (**xit**) and non-fiscal **(zit***)* variables so that the growth equation becomes,

$$y_t = \alpha + \sum_{i=1}^{k} \beta_i Z_{it} + \sum_{j=1}^{m} \gamma_j X_{jt} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

Where $y_t$is the growth rate of output per capita, **x** is the vector of fiscal variables, **z** is the vector of nonfiscal variables, and $\boldsymbol{\varepsilon_{it}}$ is white noise error term. In theory, if the budget constraint is fully specified, then $\sum_{j=1}^{m} \mathrm{X_{jt}} = 0$ because expenditures must balance revenues. To avoid this, there is a need to omit at least one element of **x** (say x_m) to avoid perfect collinearity (Kneller *et al*, 1999). Naturally, the omitted element must be that which theory suggests has neutral effect on growth, for to select any other would introduce substantial bias in parameter estimates.

Consequently, re-arranging (5) in the following form.

$$yt = \alpha + \sum_{i=1}^{k} \beta_{it} Z_{it} + \sum_{j=1}^{m-1} \gamma_j X_{jt} + \gamma_m X_{mt} + \varepsilon_{it} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (6)$$

From (6), we can then omit x_{mt} to obtain our final growth equation given below.

$$y_t = \alpha + \sum_{i=1}^{k} \beta_i Z_{it} + \sum_{j=1}^{m-1} (\gamma_j - \gamma_m) X_{jt} + \varepsilon_{it} \qquad (7)$$

The growth equation denoted by (7), as specified in Kneller *et al* (1999), constitutes the model to be estimated. Specified in this manner, the interpretation of the coefficients of fiscal variables should be seen in terms of implied financing.

That is, test is conducted on the null hypothesis that (γ_j- γ_m) = 0 instead of the conventional null that γj= 0. Accordingly, the interpretation of the coefficient of fiscal variables is the *'effect of a unit change in the relevant variable offset by a unit change in the element omitted from the regression'* (Kneller *et al,* 1999: 175). If the null is rejected, more precise parameter estimates can be obtained if the neutral elements are eliminated from the model (i.e. γ_m= 0 □□(γ_j- γ_m) = 0 = γ_j;.

In view of the fact that there is no generally agreed growth model to guide on what factors to include in a growth equation, by dropping those fiscal variables which, as stated above, are found to have a neutral effect on growth. Further three variants of growth equation are formulated (7).

First, a model is estimated in which all fiscal variables (except budget deficit which is assumed to have no long term growth effect but likely to have adverse short run effect) are included.

Second, unproductive government consumption expenditure is dropped from the equation while retaining all the other expenditure and revenue items and then testing for zero coefficient of the remaining neutral element (i.e. non-distortionary revenue).

Third, by dropping nondistortionary tax revenue, but retain all the other variables including unproductive expenditure and test for zero coefficient of the other neutral element.

4.2 Description of Variables

PINV Private Investment – obtained by deducting government investment (GINV) from gross fixed capital investment (GFCF) and expected to impact positively on economic growth.

UGC Unproductive government consumption is (total consumption or recurrent expenditure (GC) ***less*** recurrent expenditure on health, education & economic services).Theoretically, expected to have negative but insignificant impact on growth.

PGC Productive consumption expenditure – includes lists of expenditure on health, education & economic services and expected to have positive relationship with economic growth but may be negative depending on its actual composition.

GINV Government investment proxied by government's capital or development expenditure and positively correlated with growth i.e. may affect growth directly or indirectly through its complementary role to private investment.

DT Direct (income) tax revenue (distortionary revenue) and mostly negative association with growth; distorts incentives of private agents.

IDT Indirect tax revenue (nominal) – nondistortionary revenue and expected to impact economic growth positively but insignificant effect on growth (does not distort incentives).

NTR Non-tax revenue – includes capital revenue, fines, forfeitures, dividends etc and positive effect on growth since it is nondistortionary way of financing government expenditure.

BD Budget deficit – total revenues less total expenditures and its impact is ambiguous, mostly negative for LDC because of crowding out effects. May have neutral effect on long run growth Ricardian equivalence holds.

Labor force (Lf): is all people whose ages are 15 and older and actively participated in an economy. It includes both employed and unemployed.

AENR Log of (Primary + secondary school) enrolment, proxy for human capital development. It is expected to have positive correlation with economic growth expected.

4.3 Public Investment Equation

In order to investigate the determinants of the public investment in Ethiopia; this study benchmarked the model used by Tanzi and Davoodi (1997) and Sturm (2001). The later model focuses on developing countries and models public investment using three sets of explanatory variables: structural variables, such as urbanization and population growth; economic variables, such as real GDP growth, government debt, budget deficits, and foreign aid; and politico-institutional variables, such as political stability and political business cycles.

Based on the two models the Public Investment Model for Ethiopia is specified by:

$$PUBINV_t = \beta_1 + \beta_1 \mathrm{LYRPC} + \beta_2\, \mathrm{AIDNI_t} + \beta_3 \mathrm{URBAN_t} + \beta_4 \mathrm{DEBTSERY_t} + \beta_5 \mathrm{OPEN} + \beta_6 \mathrm{PIV_t} + \mathrm{V_t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (8)$$

PUBINV = public investment in percent of GDP

AIDGNI = foreign aid in percent of gross national income

URBAN = urbanization rate

DEBTSERY = total debt service in percent of GDP

LYRPC= Real Per Capita income

PI=Private Investment

EXTDEBT= External debt as percent of GDP

Tanzi and Davoodi (1997) used the real per capita income variable as a proxy for the level of economic development. In previous findings the impact of the urbanization rate on public investment is ambiguous. On the one hand, it could be argued that as a society becomes urbanized, there is a shift from the family to the government with regard to the provision of services like education and health care; thus, one might expect the coefficient on urbanization to be positive. It is plausible that increasing urbanization leads to more demand for physical infrastructure which the case for LDCs and perhaps more demand for public consumption spending, giving rise to a positive coefficient.

It is also expected that higher foreign aid enables governments to spend more on public investment. The openness indicator is included as an explanatory variable because more open economies often compete for foreign direct investment by, among other things, trying to invest more in infrastructure; thus, there is likely to be a positive relationship between openness and the public investment ratio.

4.4 Econometric Model and Data

4.4.1 Econometric model

Here empirical analysis of fiscal policy and growth is formulated by an autoregressive distributed lag (ADL) model. The choice of an ADL model rather than a static one is motivated by the need to capture all the dynamic responses in the dependent variable brought about by changes in its own lags and the contemporaneous and lagged values of the other explanatory variables. Additionally, an ADL model is more appropriate for small samples like in this study.

Starting by directly estimating a static long run equation may fail to capture any immediate, short run, and long run responses in the system thus generating imprecise coefficient estimates [Banerjee *et al* (1993), Charemza and Deadman (1997), Johnston andDiNardo (1997)]. Estimating the model in this manner yields valid *t*-statistics even when some of the right hand variables are endogenous (Enders, 1995).

This study conducted The ARDL method in two steps (Pesaran and Pesaran, 1997) such that in the first step, Test of no cointegration hypothesis is done. The approach uses the *F*-test, although the asymptotic distribution of the *F*-statistic in this context is non-standard irrespective of whether the variables are I(0) or I(1). The critical values as provided by Pesaran and Pesaran (1997) would have been used, but this study used those provided by Narayan (2004), due to their appropriateness for small samples (Boakye, 2008). Two sets of values are tabulated. The first assumes that all the variables are I(1) and the second that they are I(0). This band allows for the fact that variables may be stationary, integrated of order one, or even fractionally integrated. In this respect, when the calculated *F*-statistic is above the upper value of this band, the null hypothesis will be rejected, indicating cointegration between the variables irrespective of whether they are I(1) or I(0). If the *F*-statistic falls below the band, then the null hypothesis of no cointegration cannot be rejected. A value within the band implies the test is inconclusive.

The second step involves estimation using the ARDL method for the long and short-run parameters. In this procedure, cointegration relationship was estimated by OLS once the lag order of the model was identified. Thus, once cointegration was established, the conditional ARDL ($p, q_1, q_2, q_3, q_4, q_5, q_6, q_7, q_8$) long-run model for Y_t in equation (3.10) was estimated as:

The ARDL (p, q_1, q_2, q_3, q_4, q_5, q_6, q_7, q_8) model for Y_t:

$$Y_t = \beta_0 + \sum_{i=1}^{p} \beta_{1i}\, Y_{t-i} + \sum_{i=0}^{q1} \beta_{2i}\, lnPiv_{t-i} + \sum_{i=0}^{q2} \beta_{3i}\, NTR_{t-i} + \sum_{i=0}^{q3} \beta_{4i}\, Lf_{t-i} + \sum_{i=0}^{q4} \beta_{5i}\, Giv_{t-i} + \sum_{i=0}^{q5} \beta_{6i}\, PGC_{t-i} + \sum_{i=0}^{q6} \beta_{7i}\, DT_{t-i} + \sum_{i=0}^{q7} \beta_{8i}\, AENR_{t-i} + \sum_{i=0}^{q8} \beta_{9i}\, Aid_{t-i} + \varepsilon_t \ldots (9)$$

Where p, q_1, q_2, q_3, q_4, q_5, q_6, q_7, q_8 are the lag lengths for each of the variables.

From equation (8), the ARDL (r, s_1, s_2, s_3, s_4, s_5, s_6) ARDL model for public investment equation was estimated as:

$$Giv_t = \beta_0 + \sum_{i=1}^{r} \beta_{1i}\, Giv_{t-i} + \sum_{i=0}^{s1} \beta_{2i}\, DEBTSER_{t-i} + \sum_{i=0}^{s2} \beta_{3i}\, URBAN_{t-i} + \sum_{i=0}^{s3} \beta_{4i}\, YT_{t-i} + \sum_{i=0}^{s4} \beta_{5i}\, Aid_{t-i} + \sum_{i=0}^{s5} \beta_{6i}\, Piv_{t-i} + \sum_{i=0}^{s6} \beta_{7i}\, Open_{t-i} + \varepsilon_t \ldots\ldots\ldots (10)$$

The short-run dynamic parameters were obtained by estimating an error correction model associated with the long-run estimates. This was specified as follows for both the fiscal policy and economic growth and Public investment equations:

The short run error correction model specified as:

$$\Delta Y_t = \delta_0 + \sum_{i=1}^{n} \delta_{1i}\, \Delta Y_{Pt-i} + \sum_{i=0}^{n} \delta_{2i}\, \Delta Piv_{t-i} + \sum_{i=0}^{n} \delta_{3i}\, \Delta NTR_{t-i} + \sum_{i=0}^{n} \delta_{4i}\, \Delta Lf_{t-i} + \sum_{i=0}^{n} \delta_{5i}\, \Delta Giv_{t-i} + \sum_{i=0}^{n} \delta_{6i}\, \Delta PGC_{t-i} + \sum_{i=0}^{n} \delta_{7i}\, \Delta DT_{t-i} + + \sum_{i=0}^{n} \delta_{8i}\, \Delta AENRT_{t-i} + \sum_{i=0}^{n} \delta_{9i}\, \Delta Aid_{t-i} + \pi ecm_{t-1} + \varepsilon_t \ldots\ldots\ldots (11)$$

Where $\boldsymbol{\delta_2, \delta_3, \delta_4, \delta_5, \delta_6, \delta_7, \delta_8, \delta_9}$ are the short-run dynamic coefficients of the model's convergence to equilibrium, and π is the speed of adjustment to long-run equilibrium following a shock to the system.

$$\Delta Giv_t = \theta_0 + \sum_{i=1}^{n} \theta_{1i}\, \Delta Giv_{Pt-i} + \sum_{i=0}^{n} \theta_{2i}\, \Delta DEBTSER_{t-i} + \sum_{i=0}^{n} \theta_{3i}\, \Delta URBAN_{t-i} + \sum_{i=0}^{n} \theta_{4i}\, \Delta YT_{t-i} + \sum_{i=0}^{n} \theta_{5i}\, \Delta Aid_{t-i} + \sum_{i=0}^{n} \theta_{6i}\, \Delta Piv_{t-i} + \sum_{i=0}^{n} \theta_{7i}\, \Delta Open_{t-i} + \pi' ecm_{t-1} + \varepsilon_t \ldots\ldots (12)$$

Where θ_1, θ_2, θ_3, θ_4, θ_5, θ_6, θ_7, are the short-run dynamic coefficients of the model's convergence to equilibrium, and π' is the speed of adjustment to long-run equilibrium following a shock to the system.

4.4.2 Data and Variables

Secondary data sources collected for this study. The identification of the data sources was the first step in the data collection process and efforts were made at ensuring that data sources were consistent for all the variables. The sources of data series on fiscal and non-fiscal variables is obtained from publication of Ministry of Finance and Economic Development of Ethiopia, National bank of Ethiopia and World Bank World Development Indicator (WDI). Prior to use of data in the models, time series properties of data set were conducted on the data selected for the analysis.

In this study, government expenditure (GC) is further divided into productive (PGC) and unproductive (UGC) expenditure. This classification follows Barro(1990) who defines private agents production function includes productive expenditure and private agent's utility function incorporates the unproductive expenditure. For this study, expenditure on health, education and economic services is treated as productive in Ethiopian case. There are, of course, cautions to this disaggregation since there may be some elements of productive expenditure that are unproductive and *vice versa*.

CHAPTER FIVE

5. EMPIRICAL RESULTS AND DISCUSSION

5.1 The Unit Root Test Analysis

Prior to conducting ARDL, stationarity status of selected time series data has to be tested in order to determine their order of integration. Furthermore, it is important to check that in applying ARDL model all the variables to be included in the regression should not be integrated of order two. This implies that unit root test is the first step in dealing with variables in the estimation of models. This gives an idea that unit root test is a mechanism that helps us in deciding whether or not the ARDL model should be used. The Table 7 and Table 8 below show the results of order of integration for Fiscal Policy and Economic Growth model and Public Investment equation respectively. The result in Table 7 shows that order of integration is a mix of I(0) and I(1) but none of them is of order two.

Table 7 Unit Root Test for Fiscal Policy and Economic Growth

Augmented Dickey-Fuller Test			
Variables	**Intercept**	**Intercept & trend**	**Decision**
Yt	-4.119034*	-5.110442*	I(0)
NTR	-2.119737	-3.432403***	I(0)
GIV	-3.354593**	-3.531657***	I(0)
PIV	-3.713493*	-3.660437**	I(0)
PGC	-0.622260	-2.839782	-
D(PGC)	-4.624234*	-4.586078*	I(1)
UGC	-1.478835	-2.362235	-
D(UGC)	-7.614099*	-4.134615**	I(1)
DT	-2.640415***	-3.120562	I(0)

IDT	-1.475064	-1.290474	-
D(IDT)	-4.467324*	-4.463654*	I(1)
AID	-2.479482	-2.791614	-
D(AID)	-6.381917*	-6.364818*	I(1)
LF	-0.763472	-1.998040	-
D(LF)	-5.580808*	-16.87189	I(1)
BD	-3.285511**	-4.260176**	I(0)

*, ** (***) – indicates significance at the one, five and ten per cent level, respectively.

Source: own computation Eviews 9.

From above Table 7, it is clearly seen that, productive government expenditure (PGC), unproductive government expenditure (UGC), non-distortionary tax revenue(IDT), foreign aid(AID) and labor force (LF) are integrated of order 0ne (i.e. I(1)). GDP (yt), non-tax revenue (NTR), distortionary tax (DT) and budget deficit (BD) are integrated of order zero (I (0)).

Table 8 Unit Root Test for Public Investment Equation

Augmented Dickey-Fuller Test			
Variables	**Intercept**	**Intercept & trend**	**Decision**
PUBINV	-3.354593*	-3.531657***	I(0)
PIV	-3.713493*	-3.660437**	I(0)
LYRPC	3.227341	1.031054	-
D(LYRPC)	-3.018816**	-4.579657*	I(1)
OPEN	-0.743467	-1.821768	-
D(OPEN)	-4.831671*	-4.723854*	I(1)
DEBTSERY	-3.063864**	-3.626985**	I(0)
URBAN	-1.465974	-1.766727	-
D(URBAN)	--4.193940*	-4.106096**	I(1)
AID	-2.479482	-2.791614	-
D(AID)	-6.381917*	-6.364818*	I(1)

*, ** (***) – indicates significance at the one, five and ten per cent level, respectively.

Source: own computation Eviews 9.

Similarly, Table 8 shows variables in the Public Investment equation also exhibit a mixture of integration order zero and order one. That is, public investment(PUBINV), private investment as a share of GDP(PIV), debt service(DEBTSERY) are stationary in level while real GDP per capita (LYRPC), degree of trade openness(OPEN), urbanization rate (URBAN) and AID are stationary in first difference. Table 7 and Table 8 above gives us variables in both equations has no order of integration which is two, unless it is not possible to use ARDL approach in estimation. Then this result in unit root test give an important clue to use ARDL cointegration technique proposed by Pesaran et al. (2001) which makes it the most appropriate method for estimation or to check the long run relationship among the variables. This is to ensure that the variables should not be stationary at

an order of I(2) because the computed F-statistics provided by Pesaran, Shin and Smith (2001) are valid only when the variables are I(0) or I(1).

5.2 Stability and Diagnostic Test

Diagnostic check is undertaken in order to determine consistency of the estimated long run model which essential to know the standard property of the model. Hence, this study conducted the model stability and diagnostic checking which comprised of Serial correlation test (Brush & Godfray LM test), Functional form (Ramsey's RESET) test, Normality (Jaque-Bera test), and Hetroscedasticity test. Additionally, stability of the long run estimates is 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 decision to accept or reject the null hypothesis, the p-values related to the test statistics are taken into consideration.

Both models passed all the diagnostic tests against serial correlation (Durbin Watson test and Breusch-Godfrey test), heteroscedasticity (White Heteroskedasticity Test), and normality of errors (Jarque-Bera test). The Ramsey RESET test also suggests that the model is well specified.

Table 9 Diagnostic Test for Fiscal Policy and Economic Growth Model

Test Statistics	**LM Version**	**F Version**
A:Serial Correlation	CHSQ(1)= 1.2426 [.265]	F(1, 20)= .80799[.379]
B:Functional Form	CHSQ(1)= 32258 [.570]	F(1, 20)= .20367[.657]
C:Normality	CHSQ(2)= .65676 [.720]	Not applicable
D:Heteroscedasticity*	CHSQ(1)= 3.6934 [.055]	F(1, 30)= 3.9144 [.057]

A:Lagrange multiplier test of residual serial correlation
B:Ramsey's RESET test using the square of the fitted values
C:Based on a test of skewness and kurtosis of residuals
D:Based on the regression of squared residuals on squared fitted values

Table 10 Diagnostic Tests for Public Investment Model

Test Statistics	LM Version	F Version
A:Serial Correlation	CHSQ(1)= .58769 [.443]	F(1, 19)= .35547 [.558]
B:Functional Form	CHSQ(1)= 1.6971 [.193]	F(1, 19)= 1.0641 [.315]
C:Normality	CHSQ(2)= 1.3026 [.521]	Not applicable
D:Heteroscedasticity*	CHSQ(1)= .088546 [.766]	F(1, 30)= .083242 [.775]

A:Lagrange multiplier test of residual serial correlation
B:Ramsey's RESET test using the square of the fitted values
C:Based on a test of skewness and kurtosis of residuals
D:Based on the regression of squared residuals on squared fitted values

The above tables 9 and 10 indicate that the long run ARDL model estimated in this study passes all the diagnostic tests. This is because the p-value associated with both the LM version and the F version of the statistic was unable to reject the null hypothesis specified for each test.

Again, detecting the stability of the model for long run and short run relationship is reported by using the cumulative sum of recursive residuals (CUSUM) and the cumulative sum of squares of recursive residuals (CUSUMSQ) tests. Between two critical lines if the cumulative sum goes outside the bound (i.e. never returns back), the test shows serious parameter instability.

Figure 7 Test for Stability of Parameters for Fiscal Policy and Economic Growth Model

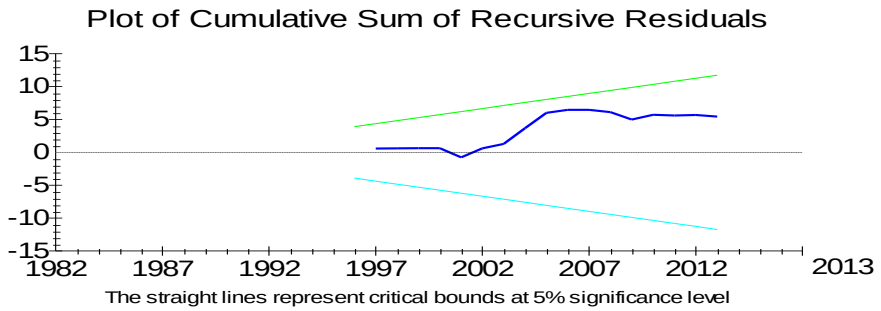


Figure 8 CUSCUMSQ Fiscal Policy and Economic Growth Model

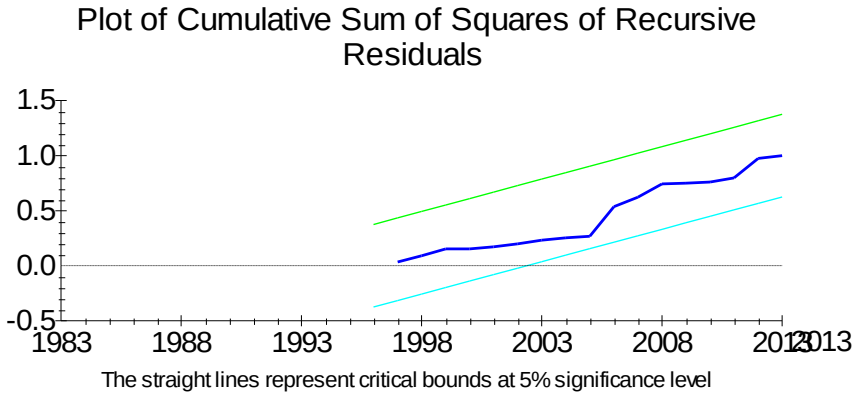


Figure 9 Stability Test of Parameter for Public Investment and Economic Growth Model

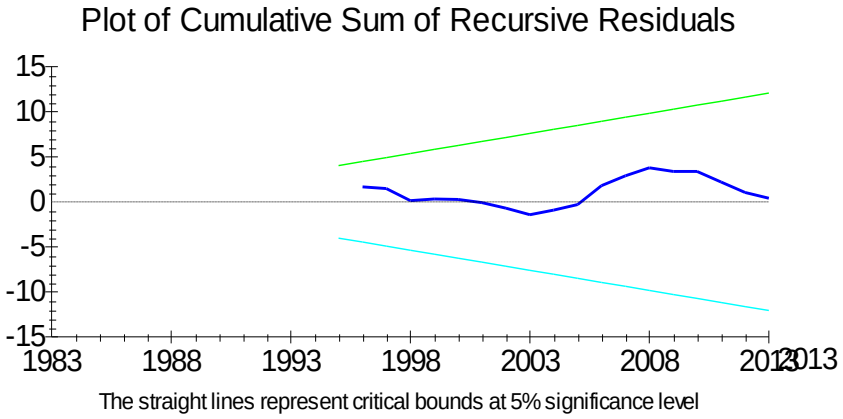
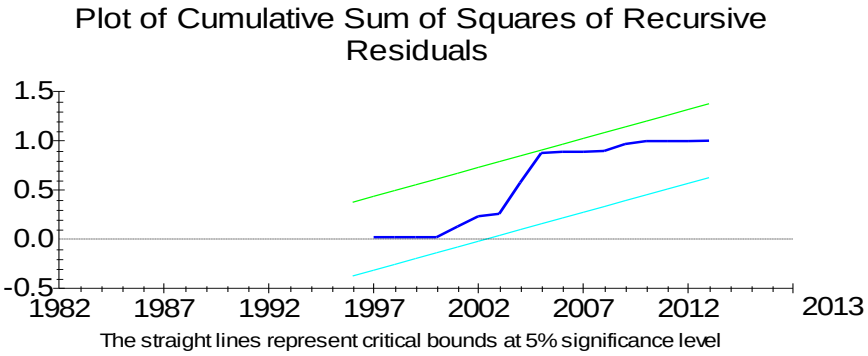


Figure 10 CUSCUMSQ for Public Investment Model



Figures 7,8,9, and 10 show the plots of both the CUSUM and CUSUMSQ for the models. It can be seen from the figures that the plot of CUSUM stays within the critical 5 per cent bound for all equations, and CUSUMSQ statistics does not exceed the critical boundaries that confirmsthe long-run relationships between the economic growth and the variables, on one hand, and public investment and the other variables, on the other. It also shows that the stability of co-efficient plots lie within the 5 per cent critical bound, thus providing evidence that the parameters of the model do not suffer from any structural instability over the period of study.

On the similar way, figures critical limits are not crossed with the plot of CUSUM test. On the same way, the lower and upper critical limits are not crossed by the CUSUMSQ test. This has an implication that there are stable long run estimates and no structural break.

From the previous diagnostic tests, it is evident that the models passed all the required tests and thus paving way for interpretation of estimates of both the long-run and short-run coefficients as required in an ARDL approach.

5.3 Long Run ARDL Bounds Tests for Co-integration

In order to empirically analyze the long-run relationships and short run dynamic interactions among the variables of interest, this study apply the autoregressive distributed lag (ARDL) cointegration technique as a general. The bounds test is mainly based on the joint F-statistic which its asymptotic distribution is non-standard under the null hypothesis of no cointegration.

The long run relationship among the variables exists if the calculated value of F - statistic is greater than the upper critical bound test, and if the calculated value of F- statistic is smaller than the lower critical bound, the long run relationship does not exist, if calculated value of F-statistic comes in between the range of LCB and UCB then the long run relationship is inconclusive (Mintz, 1991; Hassan & Kalim, 2012).

For the fiscal policy and growth equation, results in Table 11 show that the calculated *F-statistic* (7.2418) was higher than the upper bound critical value at 1 per cent level of significance (4.26). Thus, the null hypothesis of no long-run relationship between the above variable was rejected irrespective of the order of their integration implying that there was a long-run relationship between the variables.

Table 11 Bound Test for Fiscal Policy and Economic Growth Model

Test Statistic	Value	K
F-statistic	7.241842	7

Critical Value Bounds

Significance	I0 Bound	I1 Bound
10%	2.03	3.13
5%	2.32	3.5
2.5%	2.6	3.84
1%	2.96	4.26

Table 12 Bound Test for public Investment Model

Test Statistic	Value	k
F-statistic	7.555961	7
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.38	3.45
5%	2.69	3.83
2.5%	2.98	4.16
1%	3.31	4.63

As it is depicted in Table 11and 12 above, the calculated F statistics 7.24 and 7.55 for model 1 and 2 respectively which is higher than both the Pesaran *et al.* (2001) and Narayan (2004) upper bound critical values at 1% level of significance. This implies that the null hypothesis of no long-run relationship is rejected; rather accept the alternative hypothesis (there is long-run relationship) based on the Pesaran *et al.* (2001) and Narayan (2004) critical values at 1% level of significance. Therefore, there is cointegration relationship among the variables in long run for both models.

5.4 Long Run ARDL Model Estimation

5.4.1 Dynamic Modelling of Fiscal Policy and Growth

Using an ARDL model, the study began by estimating an overall model (including all relevant variables and lags) and after testing for their significance and other diagnostics such that in the final model, only the most important variables remained [Banerjee *et al* (1993), Inder (1993), Charemza and Deadman (1997)]. In line with this assertion the remaining variables in the ARDL model are: private investment, non tax revenue, government investment which is proxied by

capital expenditure, distortionary tax, aid, secondary school enrolment and labor force excluding fiscal variables i.e unproductive recurrent expenditure and non-distortionary tax.

Following Barro (1990), Kneller *et al* (1999) showed that removing unproductive consumption expenditure and/or non-distortionary taxes should have no significant effect on the magnitudes and/or signs of the other variables in the model.

This implies that dropping one or both of variables that have neutral impact on growth does not change, in any significant way, magnitudes and signs of the coefficients of the kept variables. In addition, there is cointegration in all the models as would be expected. Variable exclusion test also validated exclusion of the aforementioned fiscal variables.

After confirming the existence of long-run co-integration relationship among the variables, the next step is running the appropriate ARDL model to find out the long run coefficients, which is reported in Table 13 below.

Because of many variables in the model and the limited sample size in this study, the number of lags contained into the ARDL dynamic equations was restricted to only one period. Results for each specification are discussed in the following sections.

Table 13 Estimated Long Run Coefficients Using ARDL Approach; ARDL (1,1,0,1,0,1,0,1,0) Selected Based on Akaike Information Criterion

Dependent variable YT			
Regressors	**Coefficient**	**Standard Error**	**T-Ratio [Prob]**
PIV	.12342	.19736	.62537 [.540]
NTR	-.010888	.012383	-.87921 [.391]
GIV	.019485	.0085391	2.2818 [.035]
PGC	.013672	.0037875	3.6096 [.002]
DT	-.0037464	.0032420	-.15859 [.876]
AID	-.0058027	.15080	-1.7899 [.090]
AENR	.46113	.10510	4.3873 [.000]
LF	.26810	.38777	.69139 [.498]
INPT	2.2564	3.8606	.58446 [.566]

Source: Own Computation based on Microfit 4.1

The estimated coefficients of the long-run relationship are significant for government investment, productive government consumption, aid and school enrollment but not significant for private investment, labor, non tax revenue and distortionary tax. The government investment proxied by the government capital spending is significant and has positive contribution to growth GDP. The table reveals that an increase in capital spending by government by one percent leads to approximately 0.02 percentage increase in GDP in Ethiopia.

Similarly, Barro (1989) and Easterly and Rebelo (1993) in their cross-country studies, they found a positive and significant relationship between government investment and output. Thus results of this study are consistent with most studies on the topic and in line with theoretical prediction

of significantly positive relationship between public investment and economic growth. This is perhaps happens in Ethiopia mainly due to the significant role of government in Ethiopian economy in pursuit of developmental state ideology. This leads to come up to inference that more resources on investment spending rather than consumption spending will be a better way for the performance of Ethiopian economy. On the other hand, non-tax revenues were found to be negatively correlated with per capita output while it is statistically insignificant.

A result in Table 13 reveals that, private investment influences economic growth positively. Nevertheless, it is clearly seen that the coefficient is not statistically significant.

Foreign aid (grants) has a negative relationship with per capita output. This may be due to either fungibility of aid or conditionalities attached to aid Ethiopia as it will have negative effect on economic growth by discouraging private investment. Jifar (2002) found sectoral aid is fungible, in which case the sectoral aid impact on sectoral spending have crowding in effect.

The labor turned out to be insignificant determinants of long run growth in Ethiopia, in this study. Many studies, for example, Kneller *et al.* (1999), Bleaney *et al.* (2001) and (Fischer, 1993) provided evidence of negative and insignificant impact of labor force on per capita GDP.

Consistent with finding of Kneller et al. (1999, 2001) productive government expenditure increases growth in Ethiopia in the longrun as the coefficient of PGC is positive and significant with magnitude of .013. This implies that productive consumption expenditure and government investment have a role in determining growth of real per capita income in Ethiopia.

Moreover, economic growth is negatively and significantly affected by distortionary taxation which is in line with economic theory and empirical evidence but statistically insignificant. An increase in distortionary taxation reduces the incentive for private investment by lowering its rate of return and hence leads to reduction in economic growth.

The proxy for human capital development, school enrolment, is one of the most important determinants of long run growth in Ethiopia. It is positive and highly significant, with an output elasticity of .46. This result shows consistency with growth theories and education has a spillover effect across economy in addition to its contribution to improvement of individual skill. Similar

results have found on the Ethiopian economy by other studies. For instance, Gebru(2015) who have found human capital found to have positive and significant impact on Ethiopia.

5.4.2 Dynamic Modelling of Public Investment

There has been relatively little empirical work done on the determinants of public investment (as opposed to total or private investment) in developing countries in general and Ethiopia in particular**.** The main reason behind motivating this research on determinants of public investment is that public spending take the lion share of gross capital investment in Ethiopia and it is important to have an understanding of its determinants. Hence the results of the models of public investment are presented below:

Table 14 Estimated Long Run Coefficients Using the ARDL Approach; ARDL (1,,1,1,1,0,1,0)Selected Based on Akaike Information Criterion

Dependent variable is PUBINV			
Regressors	**Coefficient**	**Standard Error**	**T-Ratio [Prob]**
AID	.023121	.0098513	2.3470 [.029]
LYRPC	.014394	.0021298	6.7587 [.000]
DEBTSERY	.047527	.20422	.23273 [.818]
PIV	.032283	.026784	1.2053 [.242]
URBAN	.11094	.018343	6.0482 [.000]
OPEN	.027669	.0088308	3.1333 [.005]
INPT	16.1706	3.5610	4.5411 [.000]

As it is observed from the above table variables included in determinants of public investment for economic growth have expected signs except debt servicing regardless of their significant level. The real per capita, private sector investment, debt servicing, urbanization rate and aid has

positive impact on the level of public investment as a share of GDP without looking into their significance level.

As the long run estimated result of the above table showed, the real per capita GDP has positive and statistically significant impact on level of public investment. This gives confirmation to the theoretical motivation of Wagner's law (see, e.g. Henrekson, 1988), especially in the version that stresses the fact that many goods and services provided by government have a high incomeelasticity of demand. The positive relationship between real per capita GDP and Public Investment shows that capital spending is expected to increase during times of economic booms. Similarly , (Strum 2001) showed that governments in developing countries do not use capital spending as a tool for counter-cyclical policy. Another variable that shows positive relationship with public investment is private investment but statistically insignificant.

As indicated in Table 15 above foreign aid has statistically significant and positive impact on public investment. Besides alleviating immediate catastrophes, foreign aid is mostly intended to help create a better environment for sustainable economic growth. Additional foreign aid leads to larger spending of the government on capital.

The result from the table reveals that even though it is insignificant, external debt service has positive impact on the public investment which is against the expectation because it is known that countries might have offset increases in debt interest payments by winding back public capital spending.

Moreover, the positive sign of the degree of urbanization suggests that levels of public spending are higher in the urban sector than rural economies. Wagner's law (1958) also suggests increase in urbanization leads to increase in the public investment. With respect to openness, has highly significant and positive impact on the public investment in Ethiopia which is in line with theoretical prediction.

5.5 Short Run Error Correction Model

5.5.1 ECM for Fiscal policy and Economic Growth Model

The error correction term (ECT) is derived from the corresponding long run model whose coefficients are obtained by normalizing the equation. The error correction term indicates the speed of adjustment to restore equilibrium in the dynamic model. The ECM coefficient shows how quickly variables converge to equilibrium and it should have a statistically significant coefficient with a negative sign.

According to Bannerjee et al. (1998), the highly significant error correction term further confirms the existence of a stable long-run relationship.

Table 15 Error Correction Representation for Selected ARDL Model; ARDL (1,1,0,1,0,1,0,1,0) Selected Based on Akaike Information Criterion

Dependent variable YT			
Regressor	**Coefficient**	**Standard Error**	**T-Ratio[Prob]**
dPIV	.34553	.12071	2.8625 [.009]
dNTR	-.0079579	.0089037	-.89377 [.381]
dGIV	.014242	.0064162	2.2196 [.037]
dPGC	.0013957	.0029056	.48034 [.636]
dDT	-.0027383	.017375	-.15760 [.876]
dAID	-.0042413	.0031140	-1.3620 [.187]
dLF	6.2834	4.7506	1.3226 [.200]
dAENR	.50849	.19473	2.6112 [.016]
dINPT	1.6492	3.1765	.51918 [.609]
ecm(-1)	-.73091	.22633	-3.2294 [.004]

The error correction coefficient for fiscal policy and economic growth model, estimated at -.73091 which is significant and has expected negative sign leading to relatively high speed of adjustment to equilibrium.

Again, the coefficient of the error term (ECM-1) in this model shows that as result of shock to steady relationship, the deviation from long run equilibrium level of real GDP in the current period is corrected by 73% in the next period.

Results from table reveals that same as the long run result, private investment, government investment, school enrollment, productive government expenditure, and labor force have positive impact on Ethiopian economic growth and the first three variables are statistically significant in short run while others not. As a result a one percent increases in government capital spending has an output elasticity of .014 in the short run. In the short run, however, productive government expenditure does not appear to be a significant factor influencing growth in Ethiopia. The reason for this is perhaps long gestation periods required for the beneficial returns of government consumption expenditure.

Furthermore, private investment is still with positive coefficient, which indicates the positive relationship between private investment and Ethiopian economic growth.

Again like in the long run, the aid variable significantly affects economic growth at 5 percent significance level. Even though, the sign still remains is negative.

Again like the long run effect, the non-tax revenue variable is found to have a negative relationship with economic growth in the short run.

5.5.2 ECM for Public Investment Model

The result (table below) for Public Investment shows that the expected negative sign of ECM is highly significant. This confirms the existence of the long run relationship among the variables with their various significant lags. The coefficient of ECM = -.629, imply that deviation from the long-term growth in Public investment is corrected by 63% by the following year.

Table 16 error Correction Representation for Selected ARDL Model; ARDL (1,1,1,1,1,0,1,0) Selected Based on Akaike Information Criterion

Dependent variable is dPUBINV			
Regressor	**Coefficient**	**Standard Error**	**TRatio[Prob]**
dAID	.014555	.0064762	2.2474 [.034]
dLYRPC	.023770	.0042553	5.5859 [.000]
dDEBTSERY	-.088330	.11812	-.74777 [.462]
dOPEN	.017418	.0082210	2.1187 [.045]
dPIV	-.014377	.010535	-1.3647 [.185]
dURBAN	.016342	.030918	.52855 [.602]
dINPT	10.1794	2.2945	4.4364 [.000]
ecm(-1)	-.62950	.15447	-4.0753 [.000]
R-Squared .74950 R-Bar-Squared .61172			
S.E. of Regression .17086 F-stat. F(7, 24) 8.5485[.000]			
Mean of Dependent Variable .16524 S.D. of Dependent Variable .27420			
Residual Sum of Squares .58385 Equation Log-likelihood 18.6554			
Akaike Info. Criterion 6.6554 Schwarz Bayesian Criterion -2.1390			
DW-statistic 2.1840			

The coefficient of determination (R-squared) is high explaining that about 75% of variation in the real GDP is attributed to variations in the explanatory variables in the model. In addition, the DW statistic does not suggest autocorrelation and the F-statistic is quite robust.

CHAPTER SIX

6. CONCLUSIONS AND POLICY IMPLICATIONS

6.1 Introduction

This chapter presents the conclusions and policy implications of the study. The chapter is divided into two sections. Section 6.2 presents the conclusion of the study; section 6.3 covers the policy implications arising from the study findings.

6.2 Conclusion

The study sought to examine the effect of fiscal policy and economic growth in Ethiopia; examine the effect of components of fiscal policy instruments on economic growth; and additionally to analyze the determinants of public investment.

To meet the aforementioned objectives, time series data was collected for the period 1981 to 2013. In the estimation procedure an autoregressive distributed lag model was used as it yields even in presence of endogenous variables, its estimation result gives precise estimates of long-run parameters and valid t-statistics. The test is possible even if the underlying regression is purely I(0), purely I(1) or a mixture of the two types. Two models that were estimated were on economic growth and Fiscal policy nexus, and the public investment equation.

In the first model, investigation was conducted on the relationship between fiscal policy and related variables on growth in Ethiopia. The findings showed that fiscal policy instruments are highly relevant in the discussion of Ethiopian economic performance.

Overall, the study found evidence that strongly support forecast of endogenous growth model. Main findings of this study are the following: A bound test confirmed that a long run equilibrium relationship holds among the variables. Non-productive expenditures and non-distortionary taxes found to have neutral impact on economic growth in long run as well as in short run. Economic growth is affected by productive expenditures positively and significantly. Distortionary taxes affect economic growth negatively and found to be statistically insignificant. School enrollment

Variable which is included in the model as a proxy for human capital is found a source of per capita GDP.

The major revelation in the second model was that, foreign aid positively affects public investment in Ethiopia and the growth of urban centers in Ethiopia leads to increase in public capital spending which is in line with Wagner law.

6.3 Policy Implications

Concerning the policy implications, the findings of the study provide very useful insight to policy formulation and implementation. The results from the empirical investigation indicated that the overall impact of fiscal policy for the economic growth is significant. One of the key results of this study is that fiscal policy is the main driver of economic growth in Ethiopia. Productive consumption expenditure and government investment play important role in impacting growth of real per capita income in Ethiopia.

Furthermore, findings suggest that the growth of real capital income leads to increase in public investment spending which shows fiscal policy is pro-cyclical. This relationship gives clue to the policy implication that government investment should be geared towards areas that have spillover effect to the other sector of the economy for better economic output.

By the same token, any austerity measures aimed at reducing government expenditure should not be achieved by budgetary cuts on capital budget, for this reduces public investment. In line with theoretical prediction, unproductive consumption expenditure and non-distortionary taxes have neutral effects on growth. So that the policy recommendation emanates from this is that government should focus on reducing unproductive expenditure to raise government investment (which is productive according to this study).

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APPENDICES

Appendix 1 Long Run Coefficients Fiscal policy and Economic Growth

Estimated Long Run Coefficients using the ARDL Approach

ARDL(1,1,0,1,0,1,0,1,0) selected based on Akaike Information Criterion

****

Dependent variable is YT

32 observations used for estimation from 1982 to 2013

****

Regressor	Coefficient	Standard Error	TRatio[Prob]
PIV	.12342	.19736	.62537[.540]
NTR	-.010888	.012383	-.87921[.391]
LAB	.26810	.38777	.69139[.498]
GIV	.019485	.0085391	2.2818[.035]
PGC	.013672	.0037875	3.6096[.002]
DT	-.0037464	.023624	-.15859[.876]
AENR	.46113	.10510	4.3873[.000]
AID	-.0058027	.0032420	-1.7899[.090]
INPT	2.2564	3.8606	.58446[.566]

Appendix 2 Fiscal Policy and Economic Growth Model: ECM

Error Correction Representation for the Selected ARDL Model

ARDL(1,1,0,1,0,1,0,1,0) selected based on Akaike Information Criterion

****

Dependent variable is dYT

32 observations used for estimation from 1982 to 2013

****

Regressor	Coefficient	Standard Error	TRatio[Prob]
dLNPIV	.34553	.12071	2.8625[.009]
dNTR	-.0079579	.0089037	.89377[.381]
dLNLAB	6.2834	4.7506	1.3226[.200]
dGIV	.014242	.0064162	2.2196[.037]
dPGC	.0013957	.0029056	.48034[.636]
dDT	-.0027383	.017375	-.15760[.876]
dAENR	.50849	.19473	2.6112[.016]
dAID	-.0042413	.0031140	1.3620[.187]
dINPT	1.6492	3.1765	.51918[.609]
ecm(-1)	-.73091	.22633	-3.2294[.004]

****

ecm = LNYT - .12342*LNPIV + .010888*NTR -.26810*LNLAB -.019485*GIV -.0 13672*PGC + .0037464*DT -.46113*AENR + .0058027*AID -2.2564*INPT

****

R-Squared .71725 R-Bar-Squared .51304

S.E. of Regression .043613 F-stat. F(9, 22) 5.0734[.001]

Mean of Dependent Variable .052378 S.D. of Dependent Variable .062499

Appendix 3 Diagnostic Test Results

Diagnostic Tests

Test Statistics	LM Version	F Version
A:Serial Correlation	CHSQ(1)= 1.2426[.265]	F(1, 20)= .80799[.379]
B:Functional Form	CHSQ(1)= .32258[.570]	F(1, 20)= .20367[.657]
C:Normality	CHSQ(2)= .65676[.720]	Not applicable
D:Heteroscedasticity	CHSQ(1)= 3.6934[.055]	F(1, 30)= 3.9144[.057]

A:Lagrange multiplier test of residual serial correlation
B:Ramsey's RESET test using the square of the fitted values
C:Based on a test of skewness and kurtosis of residuals
D:Based on the regression of squared residuals on squared fitted values

Appendix 4 Public Investment Equation

Estimated Long Run Coefficients using the ARDL Approach

ARDL(1,1,1,1,0,1,0) selected based on Akaike Information Criterion

****

Dependent variable is GIV

32 observations used for estimation from 1982 to 2013

****

Regressor	Coefficient	Standard Error	T-Ratio[Prob]
DEBTSER	.047527	.20422	.23273[.818]
URBAN	.11094	.018343	6.0482[.000]
YT	.014394	.0021298	6.7587[.000]
AID	.023121	.0098513	2.3470[.029]
PIV	.032283	.026784	1.2053[.242]
OPEN	.027669	.0088308	3.1333[.005]
INPT	16.1706	3.5610	4.5411[.000]

****

Appendix5 Public Investment Equation: ECM

Error Correction Representation for the Selected ARDL Model

ARDL(1,1,1,1,0,1,0) selected based on Akaike Information Criterion

****

Dependent variable is dGIV

32 observations used for estimation from 1982 to 2013

****

Regressor	Coefficient	Standard Error	TRatio[Prob]
dDEBTSER	-.088330	.11812	-.74777[.462]
dURBAN	.016342	.030918	.52855[.602]
dYT	.023770	.0042553	5.5859[.000]
dAID	.014555	.0064762	2.2474[.034]
dPIV	-.014377	.010535	1.3647[.185]
dOPEN	.017418	.0082210	2.1187[.045]
dINPT	10.1794	2.2945	4.4364[.000]
ecm(-1)	-.62950	.15447	4.0753[.000]

****

ecm = GIV -.047527*DEBTSER -.11094*URBAN -.014394*YT -.023121*AID -.032

283*PIV -.027669*OPEN -16.1706*INPT

****

R-Squared	.74950	R-Bar-Squared	.61172
S.E. of Regression	.17086	F-stat. F(7, 24)	8.5485[.000]

Mean of Dependent Variable .16524 S.D. of Dependent Variable .27420

Residual Sum of Squares .58385 Equation Log-likelihood 18.6554

Akaike Info. Criterion 6.6554 Schwarz Bayesian Criterion -2.1390

DW-statistic 2.1840

****

R-Squared and R-Bar-Squared measures refer to the dependent variable

dGIV and in cases where the error correction model is highly

restricted, these measures could become negative.

Appendix 6 Diagnostic Test Public Investment Equation

Diagnostic Tests

```
*****************************************************************************
*    Test Statistics  *       LM Version        *        F Version         *
*****************************************************************************
*                     *                         *                          *
* A:Serial Correlation*CHSQ(   1)=   .58769[.443]*F(   1,  19)= .35547[.558]*
*                     *                         *                          *
* B:Functional Form   *CHSQ(   1)=   1.6971[.193]*F(   1,  19)= 1.0641[.315]*
*                     *                         *                          *
* C:Normality         *CHSQ(   2)=   1.3026[.521]*      Not applicable       *
*                     *                         *                          *
* D:Heteroscedasticity*CHSQ(   1)=  .088546[.766]*F(   1,  30)=.083242[.775]*
*****************************************************************************
```

A:Lagrange multiplier test of residual serial correlation

B:Ramsey's RESET test using the square of the fitted values

C:Based on a test of skewness and kurtosis of residuals

D:Based on the regression of squared residuals on squared fitted values