GAZI UNIVERSITY
INSTITUTE OF SOCIAL SCIENCE

MA
THESIS

DETERMINANTS OF ECONOMIC GROWTH IN ETHIOPIA: A TIME SERIES ANALYSIS, 1980-2014

AHMED SEID HASSEN

ECONOMICS DEPARTMENT

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DETERMINANTS OF ECONOMIC GROWTH IN ETHIOPIA: A TIME SERIES ANALYSIS, 1980-2014

(MA Thesis)

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ABSTRACT

The study tries to investigate the determinants of economic growth in Ethiopia. In doing so, it uses time series data for the period between 1980 and 2014. Seven important determinants are identified through extensive review of theoretical as well empirical literature. These include health and education expenditure, gross capital formation, openness to trade, foreign direct investment, inflation, and freedom and democracy indices. The study employs Johansen's multivariate cointegration and causality approach and Error Correction Model (ECM). The result of the study reveals the presence of long run relation between economic growth and its determinants. Education and health expenditure, and inflation have found growth-enhancing in the short run, while domestic investment and foreign direct investment have found detrimental to growth. However, openness, freedom and democracy have found insignificant in affecting growth in the short run in Ethiopia. From causality analysis and error correction model, it is inferred that the determinants as a whole jointly cause growth in the short run and relate with growth in the long run.

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Key Words: Economic growth; Ethiopia; Cointegration Analysis; Error Correction Model; Granger Causality

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ETİYOPYA'DA EKONOMİK BÜYÜME BELİRLEYİCİLERİ: ZEMAN SERİSİ ANALİZİ, 1980-2014

(Yüksek Lisans Tezi)

Ahmed Seid Hassen

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ÖZET

Bu tezi, Etiyopya'daki ekonomik büyümenin belirleyicilerini araştırmaya çalışmıştır. Bunu yaparken, 1980 ve 2014 yılları arasındaki zaman serisi verilerini kullanılmıştır. Teorik ve ampirik literatür kapsamlı bir şekilde incelenerek yedi önemli belirleyici belirlenmiştir. Bunlar sağlık ve eğitim harcaması, gayrisafi sermaye oluşumu, ticarete açıklık, doğrudan yabancı yatırım, enflasyon ve özgürlük ve demokrasi endeksleridir. Bu çalışma, Johansen'in çok değişkenli eşbütünleşme ve nedensellik yaklaşımını ve Hata Düzeltme Modeli'ni (ECM) kullanılmıştır. Çalışmanın sonucu, ekonomik büyüme ve belirleyiciler arasındaki uzun vadeli ilişkinin varlığını ortaya koymaktadır. Kısa vadede, eğitim ve sağlık harcamaları ve enflasyon büyümeyi artırırken, yerli yatırımlar ve doğrudan yabancı yatırımlar büyümeyi olumsuz etkilemektedir. Bununla birlikte, ticarete açıklık, özgürlük ve demokrasi, Etiyopya'da kısa vadede büyümeyi etkilemek açısından önemsiz bulundu. Nedensellik analizi ve hata düzeltme modeli sonuçlarına dayanarak, belirleyicilerin kısa vadede ülkedeki ekonomik büyümeyi birlikte belirlemek açısından önemli olduğunu ve uzun vadede, büyüme ile ilişkili olduğu sonucuna varılmıştır.

Bilim Kodu: 111901

Anahtar Kelimeler: Ekonomik büyüme; Etiyopya; Eşbütünleşme Analizi; Hata Düzeltme Modeli; Granger Nedensellik

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ACRONYMS

ARCH	Autoregressive Conditional Heteroscedastic
CPI	Consumer Price Index
CSA	Central Statistical Agency
DFAT	Australian Government Department of Foreign Affairs and Trade
ECM	Error Correction Model
ECM	Error Correction Model
ECT	Error Correction Term
EIA	Ethiopia Investment Agency
EPDRF	Ethiopian People's Democratic Revolutionary Front
FDI	Foreign Direct Investment
FDI	Foreign Direct Investment
GDP	Gross Domestic Product
GTP	Growth and Transformation Plan
ICT	Information Communication Technology
IMF	International Monetary Fund
ITC	International Trade Center
LM	Lagrange Multiplier
MoFA	Ministry of Foreign Affairs
MoFED	Ministry of Finance and Development
MoME	Ministry of Mines and Energy
MoWE	Mınıstry of Water and Energy
MW	Mega Watt
NBE	National Bank of Ethiopia
OECD	Organization for Economic Cooperation and Development
PMAC	Provisional Military Administrative Council
SECO	Switzerland State Secretariat for Economic Affairs
TCF	Trillion Cubic Feet
UNCTAD	United Nations Conference for Trade and Development
UNDP	United Nations Development Program
UNESCO	United Nations Educational, Scientific and Cultural Organization

UNIDO	United Nations Industrial Development Organization
USA	United States of America
USD	United States Dollar
USDA	United States Development Agency
VEC	Vector Error Correction
WB	World Bank

INTRODUCTION

Ethiopia is one of the world's poorest countries and majority of its people are amongst the poorest people in the world. (Bigsten et al, 2002; Diao et al, 2005; Kedir and McKay, 2003) According to World Bank (2015a), 29.6% of Ethiopians were poor in 2011, earning only 0.5 USD a day. Although the level of poverty has been decreasing through time (for example, it was 38.9% in 2004), the country is still under chronic poverty. According to the United Nations Development Program (2014), eight out of ten people were multidimensional poor in 2011 and deprived from more than two third of such welfare measure as education and health facilities, and accessibility to clean water, proper sanitation and cooking fuel. Moreover, the country was ranked 173rd from 186 countries in Human Development Index in 2014, performing below the Sub-Saharan average. Such extreme poverty is aggravated by the striding inflation which, according to World Bank (2015a), was averaged to more than 17% between 2004 and 2013. According to a study by Leite et al (2009), poverty reduction in Ethiopia performs disappointing accompanied by a surge in income inequality in which, according to World Bank (2015a), Gini coefficient for the country has increased from 0.298 in 2005 to 0.336 in 2011. This exposes the rising incidence of income inequality in the country. Moreover, unemployment and underemployment best portrays the youth in which, according to World Bank (2015a), on average nearly quarter of the active youth working labor force were unemployed during 2009 and 2012.

As a recent phenomenon of interesting, however, Ethiopian economy has become one of the fastest growing economies in the world. According to IMF (2014), the average annual growth rate of real GDP was 10.9% for ten consecutive years since 2004. In 2012, real GDP registered a relatively robust growth rate of 8.8% compared to Sub Saharan average of 5.5%. (NBE, 2013) Similarly it grew by 9.7% in 2013 and placed as the twelfth fastest growing economy in the world. (African Economic Outlook, 2014) So what determines economic growth in Ethiopia? What are the factors behind such miraculous growth that has being registered for the last decade?

There are a number of studies conducted on growth determinants in Ethiopia. For example, Easterly (2002), Semlali (1999), Geda et al (2009), Balcha (2011), Haile and Assefa (2006), Tadesse (2013), Asfaw (2015), Mustefa (2014) and Hundie (2014). However, there are only few that based on new growth theory and at the same times covered the period since when continues economic growth has being registered in the country. The traditional growth theory, as applied by many literatures, focuses on labor, capital and type of technology as the main determinants of growth and seldom cited determinants of long run economic growth and development such as saving, investment and institutional framework. (Kogid et al, 2010) Moreover, the effect of democracy and freedom on the country's economic growth is rarely studied.

Thus, in attempting to investigate the factors behind economic growth and hence, examining the way it contributes to poverty reduction, the paper tries to find out the determinants of economic growth in Ethiopia. The paper emphases on the new growth theory and it focus on investment, macroeconomic policy, international trade, human capital, democracy and freedom as determinants of growth. As one of the specific objectives, the paper aimed at assessing the theoretical framework behind growth and growth determinants. It tries to examine the structure and performance of the Ethiopian economy and its major components. In entertaining the main theme of the thesis, it aimed at providing a time series analysis in finding out the factors that affect economic growth in the country. Finally, it will provide possible recommendations up on findings.

The study employs descriptive statistics as well as econometric models in analyzing the data and reaching findings. For descriptive analysis of the data, the time span runs from 2004 to 2014 while for econometric modeling, data for the period between 1980 and 2014 will be employed.

The significance of the study lies in providing valuable information on the determining factors of economic growth in Ethiopia. In such a way, it is expected to help in finding out the most significant causes of economic growth in the country. This will definitely contribute to identify priority areas for policy making in the attempt to accelerate economic growth and promote poverty reduction in the country. The paper is, thus, expected to add on the stock of knowledge around the area of the study.

The thesis contains three chapters. The first chapter reviews the theoretical as well as empirical literatures on economic growth and its determinants. The second chapter assesses the structure and growth of the Ethiopian economy and provides descriptive analyses on the determinants of economic growth in the country. In the third chapter, a comprehensive discussion about econometrics analysis and findings is provided. Lastly, conclusion and recommendation of the finding of the study is presented.

CHAPTER ONE

THEORIES OF DETERMINANTS OF ECONOMIC GROWTH

1.1. Introduction

Over several years, the growth of aggregate production remained positive though steady in many countries in the world. The figure in the past three centuries verifies the claim. Per capita output of the world increased by an average growth rate of 0.8 percent per annum between the years 1820 and 1900. Similarly it folded twice from its level in 1900 to that of early 1990's, in response to an average growth rate of 1.9 percent per annum. (Greiner, 2010; Boltho and Toniolo, 1999) What does explain such steadily increasing per capita output?

Economic performances vary from country to country. There are significant differences between developed and developing countries in national production and individual income. Gross output in countries of North America and Europe is incomparably larger than those nations in Africa. According to Romer (1996), best estimates suggested that average real incomes in countries like United States, Germany and Japan are twenty fold higher than those nations like Bangladish and Congo. In addition, substantial differences are observed among countries in registering per capita growth rates. According to Heston et al (2002), for instance, China could achieve increasing its annual average per capita output growth rate from 3.7 percent in the period before 1900 to 7.0 percent between 1900 and 2000. However, India's average growth rate remained 4.4 percent through the periods. What does explain these differences?

Varies economists had suggested their view regarding what drives economic growth. Two major understandings are putted by classical economists in 18th century. The father of economics and the renowned classical economist Adam Smith has considered saving as the most important determinant of economic growth. Saving stimulates capital accumulation and productivity which are necessary for investment and thus output growth. According to David Ricardo, the other famous economist in the classical school of thought indicated that economic growth, most importantly, is determined by technical progress. (Greiner, 2010) Understanding economic growth and identifying its determining factors are one of the basic issues in economics. In regard to this, varies models are formulated by economists in explaining growth and its determinants.

This chapter has an insight to provide a discussion on the theoretical framework regarding economic growth and related topics. It the first part of it, a brief definition and discussion on concepts and terms of growth is provided. The second part discusses the two main groupings with reference to theorizing models of economic growth. The last portion of the chapter reviews the theoretical and empirical literatures on determinants of growth.

1.2. Definitions and Concepts

Standard economic textbooks defined economic growth as the increase in output of goods and services of an economy as compared from one period to another. According to Heilbroner and Thurow (1987), the increase in the production of goods and services is termed as economic growth and it is a function of population and per capita consumption. (Czech, 2000) Economic growth is mostly measured as the "annual rate of increase in a country's gross domestic product (GDP)". (Aghion and Howitt, 2008) It can be expressed either in nominal terms or in real terms depending on the consideration of price changes in the calculation.

Economic growth is calculated as the difference in nominal or real gross domestic product or its per capita level between two periods with reference to the initial level and it is expressed in percentages. (Kaynak, 2014) Economic growth in real terms can be expressed as in Equation (1.1).

$$g_t = \frac{RGDP_t - RGDP_{t-1}}{RGDP_{t-1}} * 100 \qquad (1.1)$$

In Equation (111), g_t is growth rate at time t;$RGDP_t$ is real GDP at time t; $RGDP_{t-1}$ is real GDP at the previous time and t is time. This expression of growth rate doesn't clearly show the real level of welfare enjoyed by citizens unless and otherwiseis adjusted to population growth. Thus, Equation (1.2) presents the real growth rate.

$$g^*{}_t = g_t - n_t \qquad (1.2)$$

Where g_t economic growth rate as expressed in Equation (1.1); and $n_t$is population growth rate as presented in Equation (1.3).

$$n_t = \frac{N_t - N_{t-1}}{N_{t-1}} * 100 \qquad (1.3)$$

In Equation (3), N_t refers to level of population at time t; and N_{t-1} refers to level of population at the previous time.

Economic growth can be attained either in full employment or in less than full employment capacity of an economy. When it is said that growth is attained in full employment level, it is to confirm that the growth is achieved by introducing new factors of production or technological advancement in the economy.(Kaynak, 2014) At this level, an economy will attain socially optimal degree of labor utilization and it can grow only by introducing new means of production in the long run. (Nelson, 1966) In less than full employment level, short term economic growth can be attained by just boosting the level of output of goods and services. (Kaynak, 2014)

Shearer, (1961) has raised some issues on the very concept of growth. First, there are methodological pitfalls in the definition of economic growth. This is attributed to lack of a careful and intelligent analysis of human behavior and economic growth and the failure to give considerations to human behavioral dynamics. Secondly, Growth is an organic and gradual change as best expressed in biological concepts. This understanding is also used for economic concepts such that an economy behaves as it grows gradually and organically and its pattern of change shows repetitiveness. For a better understanding of such concept of growth, the case in connotation, i.e. the economy or economic system, should be clearly and unambiguously characterized and well defined. Third, there is a common and widely agreed statement that economic growth should be measured in the sense of the contribution of economic activities to human welfare. In this sense, what is important is the measurement of contribution of economic activities to betterment of human living. In such notation, the increase in per capita national income is the most widely used measure of human welfare improvement and it mainly refers to the change in aggregate welfare. Fourth, though measurement of economic growth is expressed in quantitative forms and is an objective process, it also has social scopes. The welfare improvement following economic growth consist components of change in social relationships and complex conditions of individuals in society which urges subjective and sentimental evaluations. In this sense, the dynamics of growth is not only understood from the specification change in the physical aspect of the economic activities but surely also from the level and change pattern of human behavior.

1.3. Models of Economic Growth

The foundation for much of the modern economic growth theories are laid down by renown economists like Adam Smith (1978), David Ricardo (1817), Thomas Malthus (1798), Frank Ramsey (1928), Allyn Young (1928), Frank Knight (1944) and Joseph Schumpeter (1934). (Barro and Sala-i-Martin, 2004) Generally, there are two major ruling class of growth theories. These are classical economic growth theories and modern economic growth theories. This sub-chapter tries to discuss the various theories that fall under this broad classification.

1.3.1. Classical Growth Models

Classical economists in the 18th and 19th century England laid the early basis for growth theories. Classical economics played the main and central feature in modern economic growth theories. In his discussion of wealth of nations, Smith; in his elaboration of diminishing returns, Ricardo; and in his explanation of theory of population growth, Malthus had contributed a lot to formulation of modern growth theories.

The intuition towards paying attention for growth economics among classical economists includes impression for economic and social change and the concern for possible “progress” in a society. This is more reflected in Smith’s “Wealth of Nations”.

Classical economics claims capital accumulation and technological change as the main driving forces of economic growth. According to the school of thought, capital accumulation is entirely ruled by the size and type of surplus production utilized for reinvestment. (Harris, n.d)

According to Adam Smith, the inquiry in to growth of per capita income is the question of causes of improvement in labor productivity. He noted that labor productivity can be attained through capital accumulation and technological change. (Kurz and Salvadori, 2003) Technological progress of either the induced or embodied form in turn attained through division of labor and change in the mode of production. According to the classical economists, problem of growth is examined by the general principle of economic growth and by viewing the economy as one entity as a whole. Interdependence between value, distribution and growth rules the economic society in the process that involves land, labor and capital. According to Smith, insufficiency in supply of labor; scarcity and depletion of resources; and lack of motives for accumulation are considered as the potential limits for growth. (Harris, n.d.; Kurz and Salvadori, 2003)

Classical economists view the growth process as endogenous. This is more reflected in the view of Smith as he proposed that the growth of labor supply is endogenous and is determined by the movement of wage rates and thus the rate of capital accumulation. (Kurz and Salvadori, 2003)According to Smith, division of labor would enhance labor productivity and this in turn advanced the rate of profit and thus growth. (Harris, n.d.)Ricardo believes that technological progress would retard the decline in the long run productivity of capital as supply rises.

Ricardian analysis focuses on diminishing returns and the effect it has on accumulation of physical and human capital. (Barro and Sala-i-Martin, 2004) This conception views profit as residual of surplus potential for investment and it is inversely related with wage rates. (Harris, n.d.)Like that of his thought counterpart Smith, David Ricardo also shares the conception of endogenous growth. In contrary to Smith, however, Ricardo emphasized that rate of profit and economic growth might fall because of diminishing returns which arise due to scarcity and depletion of natural resources rather than due to competition among capital owners. (Kurz and Salvadori, 2003)

David Ricardo shared the idea of Smith that in younger nations with abundant of fertile land, economic backwardness and poverty resulted in excess population. Thus, economic growth will have the impact in reducing the population in agricultural sector and rising in industry. In nations with scare fertile land, excess population causes economic backwardness as is well defined by diminishing returns in agriculture. (Letiche, 1960) With regard to this, Thomas Malthus added to the classical analysis of population dynamics through his famous work, "An Essay on the Principles of Population". According to Malthus, the increase in wages above subsistent level of accumulation would increase population. The increase in labor supply following the rise in wages will in turn reduce profits and this would be a major obstacle for sustained rate of capital accumulation. Malthus suggested his famous pessimist view of biological upper limit to population expansion to prevent the decline in capital accumulation in the long term. (Harris, n.d.)

The notion of stationary and convergence towards steady state is well established among classical economists. As of Ricardo, because land is a fixed factor and exhibits diminishing returns, it is considered as the cause for falling growth rate. From this fact, the classical models of growth can be termed as specific case of resource limited growth model. According to classical economics, the falling in growth rate and the consequential end in economic growth will make the economy to experience stationary state. (Harris, n.d.)According to Ricardo, stationary state will be reached when labor supply reached at a level where total wages equals to the difference between total product and rent. At this point, profits will be zero and accumulations will cease. (Letiche, 1960)

1.3.2. Harrod-Domar Growth Model

R.F. Harrod (1939) and Evsey D. Domar (1946) developed basically same growth model yet independently. Harrod-Domar model bases its analysis on the very assumption of market failure and economies with less than full employment. This is a similar approach with that of Keynes. The model further assumes a constant capital-output ratio. (Greiner, 2010)

Harrod-Domar model emphasized the capacity effect of investment alongside its income effect which is solely analyzed in the works of Keynes. (Greiner, 2010) To this end, investment has an impact in increasing not only national income but also the productive capacity of the economy. This dual characteristic of investment process makes the analysis of equilibrium growth path to basis from investment view point. Thus, the model claims growth as a function of investment (capital). (Domar, 1946)

The model gives an investigation of relation between investment, rate of economic growth and growth of employment. (Domar, 1946)This relationship is expressed in a way that there exists a growth pathway called Warranted Growth Path that equates the growth rates of gross domestic product, consumption, capital stock and investment. According to the theory, the increase in propensity saving will have stimulating impact on warranted growth rate. The ideal policy is manipulating the warranted growth path and equating with the natural growth rate, which is the maximum rate achieved considering the increase in population, technological improvement, capital accumulation and work/ leisure preference schedules and in some sense full employment. (Harrod, 1939)

Warranted growth rate can only be achieved when it is started in a warranted growth path. At warranted growth path, the desired level of capital-output ratio retains its equivalence to its actual level. But if an economy started in a path which is different from the warranted growth path, that growth path (actual growth path) will diverge further from the warranted path. If the actual growth path is lower than the warranted growth path, for example, the share of capital stock from total investment will decline to reduce investment and actual growth rate. This make actual growth path to diverge further downward from the warranted growth path. The same implication applies when actual growth path is higher than warranted growth path. At this scenario, the actual growth path diverges further upward from the warranted growth path. (Greiner, 2010; Domar, 1946) Thus, according to the model, the warranted growth path exhibits characteristics of a moving equilibrium which is highly unstable. (Harrod, 1939) The problem of unstable nature of the growth path paved ways for neoclassical growth theories in 1950s. (Greiner, 2010; Domar, 1946)

1.3.3. Neoclassical Growth Models

The problem of instability in the Harrod-Dommar growth theory gave utmost motivation for the development of neoclassical growth theories in 1950s. Neoclassical growth theories, developed by Ramsey (1928), Solow (1956), Swan (1956), Cass (1965), and Koopmans (1965), were the leading growth models of the 1960s.(Barro and Sala-i-Martin, 2004) The neoclassical growth models postulate that labor, capital and exogenous technology are the main determining factors of growth. (Romer, 1996)

Neoclassical growth models provide important analysis on how capital accumulation affects national income, real interest rates and real wages. The models shows how induced saving has stimulating impact on economic growth of an economy. The models assumes exogenous technology and diminishing marginal productivity and suggests the presence of a steady growth rate in the long run, which equates to the rate of technological change and which put the economy under stable equilibrium.(Aghion and Howitt, 2008)

1.3.3.1. The Solow-Swan Growth Model

The Solow-Swan, most commonly termed as the Solow model, is a dynamic general equilibrium growth model developed by Robert Solow (1956) and Trevor Swan (1956). (Acemoglu, 2008) The model is based on the assumption that the only important factors of production are labor, capital and technology. It also assumes constant returns to scale in labor and capital. Saving, population growth and technological change are also assumed exogenous, provided outside the model. (Romer, 1996; Aghion and Howitt, 2008) Considering that Y, K and L represent output, capital stock, labor respectively and, A is knowledge or effective labor and t is time, the production function is given by equation (1.4).(Romer, 1996)

$$Y(t) = f\big((K(t), A(t)L(t)\big) \tag{1.4}$$

Given that population growth rate, share of investment from output (saving rate), depreciation rate of capital, and the rate of technological change are all exogenous and constant and denoted as n, s, δ and g, the fundamental equation of the Solow model is given by equation (1.5).

$$\dot{\hat{k}} = sf(\hat{k}) - (\delta + n + g)\hat{k} \tag{1.5}$$

Equation (1.5) dictates that $\dot{\hat{k}}$, rate of change of capital per unit of effective labor (A(t)L(t)), is the difference between actual investment per unit of effective labor ($sf(\hat{k})$) and the breakeven investment level ($(\delta + n + g)\hat{k}$) that maintain the current level of capital per effective labor, k.(Romer, 1996) The rate of capital accumulation is, thus, depends on how the actual investment per effective labor exceeds the level of investment that keep existing stock of capital per effective labor.

According to the Solow model, there exists a steady state where output per worker and capital per worker grow at constant rate of technological change, g. This implies that, in the long run the growth rates of output per worker and capital per worker converges to growth rate of technological advancement. (Aghion and Howitt, 2008) Thus in the long run, growth rate is independent of endogenous variables and stays constant. These analytical remarks make the model to question about convergence among economies. According to the Solow model, there exists conditional convergence which a country with lower initial level of per capita output converges to another country with higher initial level of per capita output, assuming that both shares the same level of technology, population growth rate, saving rate and depreciation rate.(Aghion and Howitt, 2008)

According to the model, a change in saving rate has positive impact in increasing steady state levels of output per effective labor and capital per effective labor. This is to mean that a higher steady state levels can be achieved through allowing the share of investment to be larger. However, the impact of a change in saving rate is only of a level effect and it wouldn’t affect the growth rate in the long run.(Romer, 1996) Thus, the growth rate in the long run remains unchanged despite changes in any parameter. The effect of increased saving rate on consumption, however, depends on whether the additional output from the increased stock of capital is enough to uphold the stock of capital at its higher level. If so, increasing saving rate raises consumption in the long run.

1.3.3.2. The Ramsey-Cass-Koopmans Model

The Solow growth model assumes saving as exogenous and constant variable. Moreover it is assumed that saving is the source for capital accumulation and the cause for change in growth rate from the steady state when the economy is on transition period. By relaxing the assumption of exogenous saving rate, the British mathematician and economist Frank Ramsey (1903-30) published a sophisticated model of optimization of household and firms. The model was later refined by Cass (1965) and Koopmans (1965), who further worked on it and thus named Ramsey-Cass-Koopmans model or simply Ramsey model. The model bases its formulation on the Solow model. The Solow model with a constant saving is a specific case of the Ramsey model. The Solow model, thus, comes out as a special case of the more general Ramsey model. (Barro and Sala-i-Martin, 2004)

In the Ramsey model, it is supposed that the economy is closed and time is continuous. It is assumed that there is large but constant number of identical households, implying perfect competitive factor and product market. Each household endowed with one unit of labor and earns labor income (wage (w)) and capital income (interest rate minus rate of depreciation (r -δ)) from supplying its labor and capital asset respectively. It is also assumed that the representative household will maximize its present value of infinite lifetime utility stream subject to budget constraint such that the present value of lifetime consumption is less than initial wealth and present value of lifetime labor income. (Romer, 1996; Aghion and Howitt, 2008; Barro and Sala-i-Martin, 2004) Similarly, each firm is assumed to maximize its profit under perfect competition and it takes the neoclassical production function with constant returns to scale. (Barro and Sala-i-Martin, 2004)

Firms behave as a competitive firm in a competitive economy where they employ labor and capital and pay their marginal products and sell the resulting output. In such a setup, firms earn zero profit. (Romer, 1996)

The representative household takes the path of r and w, as is given and chooses its consumption and asset to maximize its inter-temporal utility. Thus, the social planner maximizes utility of households subject to aggregate resource allocation constraint of the economy. Therefore, the maximization problem is given as equation (1.6). (Romer, 1996)

$$U = \int_0^{\infty} u(C) L e^{-\rho t} dt \tag{1.6}$$

Subject to $\dot{a} = (r - n)a + w - c$

Where, C is the consumption of each member of the household; L is the number of household members; ρ is the discount (time preference) rate of consumption; r is the rate of return to saving (real interest rate); a is household asset incorporating all capital; and w is wage rate.

The instantaneous utility function, also known as the constant relative risk aversion, is given in equation (1.7).

$$\mathrm{U}\big(\mathrm{c(t)}\big) = \frac{c(t)^{1-\theta}}{1-\theta} = \frac{-U'(C)}{U''(C)C} \tag{1.7}$$

Where, θ represents coefficient of the path of the inter-temporal utility and is the inter-temporal elasticity of substitution which measure the responsiveness of consumption to change in the marginal utility. (Alava, 2002; Vourvachaki, 2009)

Considering the Euler equation expressed in equation (1.8), the equilibrium of the model for the whole economy is the steady state values obtained from dynamics of consumption per effective worker and capital per effective worker as presented in equations (1.9) and (1.10).

$$\frac{\dot{c}}{c} = \frac{r-\rho-\theta g}{\theta} \tag{1.8}$$

$$\dot{\hat{c}} = \hat{c}\frac{f'(\hat{k})-\rho-\delta-\theta g}{\theta} \tag{1.9}$$

$$\dot{\hat{k}} = f(\hat{k}) - \hat{c} - (\delta + n + g)\hat{k} \tag{1.10}$$

In this dynamics, δ represents the rate of depreciation; and g is the rate of growth of technology. The steady state level of capital per effective worker should satisfy equation (1.11).

$$f\ (\hat{k}^{*}) = \delta + \rho + \theta g \tag{1.11}$$

In the long run, there is a balanced growth path where the level of output, capital and consumption per effective worker is constant once the economy reached the equilibrium steady state. (Romer, 1996) The balanced growth rate is completely determined by exogenous parameters of $\delta,\ n$ and g. All per capita variables grow at the rate of technological growth (g) and all variables at level grow at the sum of growth rates of population and of technology (n+g). Thus, public policy cannot influence the long run growth rate of an economy. This is opposite to Harrod-Domar theory in which the long run growth rate is determined by saving rate and capital output ratio. However, public policy though cannot influence balanced growth rate, can affect the level of balanced growth path along the transition period both in Solow and Ramsey models. (Alava, 2002)

The neoclassical growth theories, generally, dictate that economic growth is driven solely by technological change in the long run. However, the theories don't account for technological change in their specification. It is merely given by unspecified process outside the model. In addition, the theories provide explanations on countries' growth path and its factors and provide account for existence of convergence among economies. Nevertheless, the theories are limited to give comprehensive analysis on and justification for cross-country differences in growth. Endogenous growth models address these limitations by incorporating growth of technology as a dependent factor. (Aghion and Howitt, 2008

1.3.4. Endogenous Growth Models

Neoclassical growth theory couldn't provide explanation on what caused technological progress. It merely considers that exogenous technological change affect long run growth rate. This leads to a neoclassical growth conclusion that the sources of growth are capital accumulation and improvement in labor. In addition, neoclassical growth models assume a production function characterized by diminishing returns. This allows neoclassical economists to claim that an economy tends to equilibrium through time. It was in the mid-1980s that dissatisfaction with these views arose and led to development of endogenous growth theories (also known as new growth theories). In new growth models, economic growth is determined within the model.

Endogenous growth models emphasized on growth modeling that resulted from increasing returns associated with stock of knowledge. The implication of increasing returns lies on providing limitless opportunity for growth; making market to under-invest in knowledge; allowing monopolistic competitive knowledge-based economies; and reaching to possibility of multiple equilibriums. In endogenous growth models it doesn't necessitate to achieve an optimal state and if so, not necessarily of a unique one. (Cortright, 2001; Barro and Sala-i-Martin, 2004)

According to Romer (1996) endogenous growth theories claim that "the driving force of growth is the accumulation of knowledge." This considers the basic tenet that new growth theory ensures a non-decreasing return to accumulated capital. (D'Agata and Freni, 2003) In this regard, capital plays central role in growth and it is assumed to include human capital as well. Human capital, thus, is not a mere labor force imbedded but seen as capital to capture the stock of knowledge in part. (Romer, 1996; D'Agata and Freni, 2003)

New growth theories have two main objectives. The first one is to provide a clear explanation for sustained growth that couldn't be done by either Ramsey or Solow. Second, it aims at providing a rigorous model of inclusive of all crucial variables of investment, saving and technological growth in decision making process. According to the new growth models, there are two main features to ensure sustained growth: accumulation of human capital and technological progress. These are the only ways to eliminate diminishing returns and secure sustained growth (D'Agata and Freni, 2003; Barro and Sala-i-Martin, 2004) Based on these important features, new growth models can be viewed from two groups. The first collection of models emphasized on disestablishing the essence of diminishing returns by assuming all inputs of production to be "accumulable". This class of models assumes constant returns to capital of all forms. Models which formalize human capital accumulation as key factor of growth are of this sub-class. According to these models, positive externality is associated with human capital accumulation. The technology gained by one producer may have spillover effect on knowledge transfer to the other. Sustained growth is achieved through transforming labor to a productive capacity and hence human accumulation. (D'Agata and Freni, 2003; Kurz and Salvadori, 2003; Barro and Sala-i-Martin, 2004)

The second sub-class of new growth models is developed through eliminating the assumption of falling capital returns by introducing technological knowledge improvement in the production function. In these models, assumptions of positive external effects and existence of finite production firms ensures sustained productivity and thus growth rate which is free from bending towards a growth path and hence from a consequential influence by exogenous factors. (D'Agata and Freni, 2003)

The AK model is regarded as the simplest model from the class of new growth models. It is believed to be first developed by Neumann (1937). (Barro and Sala-i-Martin, 2004) It depicts the linear relationship between total output and the sole input, capital. (Kurz and Salvadori, 2003) The model assumes that technological change is a consequence of producing new capital goods. This is noted as "learning by doing" process and it generates technological progress when capital is accumulated such that marginal productivity rises even in the absence of technological change. (Aghion and Howitt, 2008)The production function is presented in equation (1.12).

$$Y = AK \tag{1.12}$$

Where, Y represents total output; K is capital and the positive constant A denotes the level of technology. Linearity of the relationship eradicates the assumption of diminishing returns. The incorporation of human capital in K ensures a more plausible acceptance of non-falling returns to scale. Barro and Sala-i-Martin, 2004) In the AK model, per capita growth rate of capital is the difference between actual saving (investment) and breakeven investment levels as depicted in equation (1.13)

$$\frac{\dot{k}}{k} = sA - (n + \delta) \tag{1.13}$$

In contrary to neoclassical models, in the absence of technological progress, the AK model dictates that per capita growth rates of capital, output and consumption always grow at constant steady-state growth rate. The long run growth depends on efficiency in resource allocation. (Aghion and Howitt, 2008) In this respect, opposing to neoclassical conclusions, changes in the level of saving, population and depreciation and change in technology bring permanent effect in changing the long run growth rates. (Barro and Sala-i-Martin, 2004) In addition, the model invalidates both absolute and conditional convergence and it dictates that economies with structural similarities grow at the same rate even if their initial levels of capital, output and consumption differs. This notion of the model, nevertheless, is highly criticized as regular empirical evidence guarantees conditional convergence. (Barro and Sala-i-Martin, 2004)

1.4. Determining Factors of Economic Growth

What determines economic growth? This is one of the basic macroeconomic questions that attracted attentions of many economics literatures. There are numerous models that theorize determinant and source of economic growth. Several applied researches have also been conducted in finding out growth determinants in different countries and under varying conditions.

Although a unified and universal growth model is not theorized, there are several partial theories that deal with driving factors of growth. Section 1.3 of the chapter provided important discussion on the theories of growth economics. Basically, there are two different theories and approaches that discuss on the source and determinants of economic growth. The first is the neoclassical growth theory which bases itself on the

Solow (1956) growth model. The theory emphasized the role of investment and it identifies capital, labor and type of technology as the main source of growth. Theory of endogenous growth developed by Romer (1986) and Lucas (1988) is the other strand of more recent one which focuses on human capital and innovation as key factors for growth. The attention in this new growth model goes to technological change, the role of government, trade policy and human capital development. Furthermore, non-economic explanation of growth became a growing literature that resulted in the development of the division of growth determinants as ‘proximate’, which focuses on capital, labor and technology; and ‘fundamental’, emphasizing on institutions, legal and political system, socio-economic factors, demography and geography. (Kogid et al, 2010; Balcha, 2011; Petrakos et al, 2007) This section is devoted to assessment of the determinants of economic growth referring the theoretical framework as well as empirical evidences.

1.4.1. Economic Policies and Macroeconomic Conditions

Conducive and stable macroeconomic environment is one of the most significant and decisive determinants of economic growth. Economic performance of a country is directly linked with the effectiveness and comprehensiveness of economic policies and stability of macroeconomic conditions. Monetary, fiscal and exchange rate policies are considered as necessary, though not sufficient, conditions for economic growth (Fischer, 1991)

There are various studies associating growth with economic policies and macroeconomic conditions. Inflation reduces economic growth through reducing investment and productivity growth. Budget deficit, as well, shrinks economic growth as it reduces capital accumulation and productivity growth. Fischer (1993) found out that economic growth is negatively associated with macroeconomic policy indicators of high inflation, large budget deficit and distorted foreign exchange market and the causation moves from macroeconomic policy to growth. Similarly, Bruno and Easterly (1998) indicated that growth is retarded during periods of high inflation crises and recovers strongly and rapidly after inflation falls.

Fischer (1991) examined the contention that associate external debt and economic growth and reach on the conclusion that external debt negatively affect growth. Bearing this in mind, a study by Clements et al (2003) revealed that reduction in external debt would result in increasing per capita growth in low income countries.

According to Prasad et al (2007), there is a positive correlation between current account balance and growth among nonindustrial countries. Similarly, Edwards (2004) found that current account reversals had negative effect on real growth. On the other hand, Calderon et al (2002) evidenced the negative association of the indicators but the causality goes from economic growth to current account deficit.

Generally, macroeconomic instability and uncertainty affect growth negatively through reducing productivity and capital accumulation while reducing uncertainties and ensuring macroeconomic stability favor growth. As noted in Fischer (1991), the ability of governments to control and manage their economies and hence insure macroeconomic stability, thus, can be measured by the incidence of high inflation and large budget deficit.

1.4.2. Domestic Investment

Investment is one of the most important determining factors to growth. In neoclassical growth model, capital is considered as significant, though provisional, source of growth in the transitional period. However, endogenous growth models incorporate investment as substantial and permanent determinant of economic growth. Empirical studies on investment and growth also consolidate the contention.

According to Oketch (2006), high investment in physical and human capital is the sources of labor productivity and per capita growth in African nations. De Long and Summers (1990), on the other hand, made a premise on the causal relationship between investment and growth in such a way that investment in machinery and equipment drives faster growth. Moreover, as of Blomstrom et al (1993), high rates of capital formation supplements with rapid growth in per capita income. With regard to Ethiopia, Mustefa (2014) and Hundie (2014), among others, found that investment has a strong positive impact on economic growth in the country both in the short run and long run.

1.4.3. Human Capital Formation

Human capital formation is one of the most important determining factors of economic growth. Human capital appears on several models of endogenous growth theories. It is commonly measured by education and health variables. Human capital in education sense refers to the stock of knowledge and skill that a human being can possess through education and training. In various studies it is approximated by variables like years of schooling, school-enrolment rates, tests of mathematics and scientific skills or educational expenditure. (Petrakos et al, 2007) Health human capital, on the other hand, can be captured by variables of nutrition, life expectancy, survival rate, prevalence of disease or health expenditure.

A number of empirical studies examined the association between human capital and growth and the significance of their relation. According to studies by Barro (1989), Mankiw et al (1992), Glaeser et al (1995), Temple, (1999), Cissone and Papaioannou (2006) and Kalaitzidakis (2001), for instance, human capital is found to be positively and significantly related with economic growth. Regarding Ethiopia, Barro (1989), Gebrehiwot (2014) and Kumsa (2014), among many others, found that human capital has a strong and long run positive effect on economic growth of the country. However, there are some studies that strongly question these findings and thus the importance of human capital as a key factor of growth. Among them are Pritchett (2001), Benhabib and Spiegel (1994) and Krueger and Lindahl (2001).

Research and development (R &D) and innovation are also considered as important factor in the process of human capital formation. These improves new mode of production by enhancing technological advancement. New growth models incorporate R & D and innovation as essential factor of growth. It is commonly measured by like patent application, patent grants or expenditure on research and development. In relation to this, Ulku (2004) analyzed the empirical relationship between patent stock (innovation) and per capita GDP and found out a positive and significance one both for OECD and non-OECD countries.

1.4.4. Foreign Direct Investment

As one of the most important growth determinants, foreign direct investment (FDI) influences growth through the transfer of foreign capital in to an economy. It plays a considerable role in internalizing economic activities and technology transfer. It is included and its role is stressed in most of endogenous growth models. (Petrakos et al, 2007)

Several empirical findings confirm a significant and positive relationship between foreign direct investment and growth. Borensztein et al, (1998) discloses the constructive role of FDI on growth in developing countries and conclude that it is a crucial factor for technology transfer, assuming sufficient absorptive capacity within the receiving country. The study further reveals that FDI contributes more to growth than domestic investment does. A study by Mello (1999), on the other hand, depicts that although foreign direct investment is expected to boost long run economic growth via technology upgrading and knowledge spillovers, the extent that it is growth-enhancing depends on the degree of complementarity and substitution between FDI and domestic investment. By Differentiating countries based on their trade policies, Balasubramanyam et al (1996) stressed that the beneficial effect of foreign direct investment is stronger in those developing countries which peruse an outward oriented trade policy than those which adapt inward oriented policy. An empirical analysis by Alfaro (2003) tries to disaggregate the effect of FDI on growth by sector and concludes that FDI on manufacturing has positive influence on growth while FDI on primary and service sector tends to show negative and ambiguous effect respectively.

A number of studies are done which assert the positive and significant link between FDI and economic growth in Ethiopia. According to Menamo (2014), two years lagged FDI has statistically significant positive impact on growth in the country and its influence is more significant following the trade liberalization in current regime. Similarly, Lucie (2012) concludes that the high inflow of FDI currently has positive impact on growth and poverty reduction in the country. As per the study, this is also expected to continue in future. A study by Haile and Assefa (2006) reached on similar conclusion but it put the causality moving from economic growth to FDI.

1.4.5. Openness to Trade

Openness to trade is widely incorporated in several growth models as one of the most important determinants of growth. According to Petrakos et al (2007), the effect of openness can be explained through channels such as exploitation of comparative advantages, technology transfer and knowledge diffusion, increasing scale of economies and exposure to competition. Openness to trade is expressed as the ratio of sum of exports and imports to GDP. Nonetheless, following Sachs and Warner (1995), Petrakos et al (2007) list other criteria which label a country as “open to trade”. These include a less than 40% of average quota, tariffs and licensing coverage of imports; a less than 20% black market premium; lack of extreme control on exports; and a non-socialist economic regime.

There are several literatures that unveil the significant and positive link between openness and growth. According to a study by Sachs at al (1995), openness is found growth-enhancing. The findings of the study assert the view that those developing countries following open trade policies during 1970-1989 grew at 4.49 percent while those closed developed economies grew by only 0.69 percent. Similarly, those open developed countries grew by 2.29 percent while those of closed economies grew only at 0.74 percent during the same period.

According to a study by Yanikkaya (2003), trade openness has positive and significant effect on long run economic growth. However, it unveils that trade barriers positively and, in most specifications, significantly interrelated with growth for developing countries as is posited by growth and development literatures. Similarly, a study by Andersen and Babula (2008) disclose the likely positive link between openness and long run economic growth. Nevertheless, it concludes that it is necessary to invest in education, enhance property rights and buildup institutions for developing countries to improve their ability to gain productivity growth following trade liberalization. According Bourdon et al (n.d), the association between openness and growth is high in those countries exporting quality and variety products. Regarding Ethiopia, studies by such as Easterly (2002), Tadesse (2013) and Asfaw (2015) found trade openness growth-enhancing in the economy.

1.4.6. Demographic Conditions

Demographic conditions such as population growth, migration, age composition and population density appears to have significant role in economic growth of a country. In literatures, rapid population growth is viewed as destructive as well as constructive to economic growth. Population growth negatively impacts economic growth through influencing the dependency ratio, saving and investment behavior and quality of human capital. (Petrakos et al, 2007) It may also be constructive through bringing economies of scale, specialization, favorable motivation caused by dependency and favorable attitudes and motivation of the young generation. (Easterlin, 1967) Growth depends on the age composition of a population, in which a large working-age population provides cheap labor and thus foster production. Economic growth may also be affected by population density through advantages like increasing specialization and knowledge diffusion. Similarly, migration imposes an impact on growth of both receiving and sending country. (Petrakos et al, 2007)

Several studies were conducted in affirming for the possible impact of demographic conditions on growth while several of others couldn’t correlate them. Bloom et al (1989) and (1999) and Bloom and Williamson (1989) as cited in Paul (2002) find out that the faster growth of the working-age group than that of the dependent population contributed considerably to the growth miracle of East Asian countries between 1965 and 1990. According to Anderson (1998), age structure has important impact on economic growth in individual Scandinavian countries. Similarly, Bloom et al (1998) reveals that slower economic growth in most part of Africa significantly attributed to the continent's demographic structure elaborated by high dependency ratio.

Dos Santos and Vinay (2000) conclude that migration has constructive role in promoting growth in developing countries and similarly a study by Ozgen et al (2009) discloses the positive implication of migration on income growth. As per Dao (2012), population growth, dependency ratio and mortality rate significantly associated with growth of per capita GDP in developing countries and population growth found negatively correlated with per capita GDP growth. According to Crenshaw et al (1997), an increase in child population hinders economic progress while a rise in adult population fosters economic development in developing countries. According to Geda et al (2002), as cited in Kassahun (2003) population growth is one of the most important determinants of economic growth. However, studies, for example, by Easterlin (1967), Pritchett (2001) and Grier and Tullock (1989) disclaim the fact that demographic trends and economic growth have significant correlation.

1.4.7. Natural Resources and Geographic Conditions

Geographic conditions and abundance of natural resource have crucial effect on growth of an economy. Factors like climate and location have paramount effect on level and growth of income. Bad weather condition, for instance, may increase the prevalence of disease which in turn affects agricultural production. Similarly, location significantly alters a country's involvement in international trade through raising transport costs. According to Gallup et al (1999), for instance, tropical regions are less favored in terms of growth than temperate regions due to prevalence of disease and limitation in agricultural productivity. Furthermore, coastal regions exhibit comparatively rapid economic growth than hinterlands relating to access to sea which eases international trade and migration.

A number of empirical literatures try to examine the link between natural resource abundance and growth. A study by Sachs and Warner (1995) reveals that countries with high ratio of export of natural resources to GDP registered slower growth rates during

1970-1990. Similarly, Gylfason and Zoega (2001) found out that abundance of natural resources may retard economic growth as it may crowds out physical capital and lowers saving and investment.

Weather condition is one of the main determinants of economic growth especially in countries where rain fed agriculture plays significant role. This is the case for many developing countries including Ethiopia. Varies studies suggest the significant association of weather condition and economic growth. According to a study by Dell et al (2011), high temperature significantly reduces economic growth in poor countries and it has wide range effects both on agricultural and industrial output. Similarly, a study by Barrios et al (2010) shows that, rainfall is a significant determinant of poor economic growth for African nations. A study by Brenner and Lee (2014), further, unveils that in more developed countries with high average heat index, economic growth decreases with increasing heat index. Moreover, it discloses the negative impact of global warming on productivity and growth in warmer developed countries.

According to You and Ringler (2011), climate change, hydrological variability and frequency of extreme weather events have significant negative effect on agricultural output and hence economic growth in Ethiopia. A study by Aragie (2003) reveals that the performance of agriculture and thus economic growth in Ethiopia is highly and significantly influenced by the trends in rainfall. Similarly, the findings by Ali (2012) demonstrates that economic growth in Ethiopia is negatively influenced by rainfall variability and this in turn depends on the amplitudes of rainfall variability and the occurrence of extreme events.

1.4.8. Institutional Factors

A number of theoretical as well as empirical studies documented the role of institutions to growth as one of its crucial determinants. Cross country growth differences are also explained partly by differences in institutions across countries. Following the definition given by North (1990), Acemoglu (2008) elaborate that three important features of institutions are worth noting. First, institutions are "humanly devised" in which they are created and run by human being in contrast with other factors outside human control, like geographic forces. Secondly, institutions are the “rule of game” which once set then control the human behavior. Thirdly, the effect institutions impose is seen through shaping human behavior and thus the incentives they provide. Institution has also been understood from what it meant to serve in fostering economic freedom, political freedom and/or civil liberties.

There are voluminous studies conducted in attempt to find out the role of institutions to growth. In his notable work “Democracy and Growth”, Barro (1996) attempted to link between institutions and growth and conclude that the presence of rule of law, free markets, small government expenditure and high human capital found favorable for growth. While neglecting the presence of these variables and initial GDP, however, the overall correlation of democracy and growth is found week. Furthermore, it reveals that growth-enhancing democracy is observed at low level of political freedom. Furthermore, Tavares and Wacziarg (2001) reached at similar result that democracy is not growth-driving. As is indicated in the researches, measurement and specification problems partly explain these unexpected results.

In attempting to investigate the possible relation between growth and freedom, Ali, (1997) and Ali and Crain (2002) documented that economic freedom is more robust in affecting growth than political freedom and civil liberties. Vijayaraghavan and Ward (2001) have tried to examine the relationship between growth rates and institutional variables of property right security, political freedom, governance and size of government. It was apparent from the findings that security in property right and size of government (government consumption) are growth-enhancing.

In a study by Mo (2001) regarding corruption and growths, it is found that corruption has a robust depressing effect on human capital, share of private investment and economic growth. Acemoglu et al (2003), tried to associate the deep institutional cause with macroeconomic stability and reveals that countries with weak institutions tend to experience deeper economic instabilities through different channels, among them are various microeconomic and macroeconomic tools.

CHAPTER TWO

ETHIOPIAN ECONOMY AND ITS GROWTH DETERMINANTS

2.1. Introduction

Ethiopian economy is composed of three main sectors: agriculture, industry and service sectors. The economy, most importantly, is dominated by agriculture and it can be characterized as agrarian. It is the livelihood of majority of the population. Moreover, significant part of the revenue from the country's export is generated from agriculture. Though still the highest, its share from the country's total production has been decreasing. With respect to this, the service sector is registering fast growth and expected to take the lead. Industry is also growing fast very lately, though its share in the economy still remains very low.

Endowed with natural resources of ample economic prospective, Ethiopia has huge potential in economic growth and development. The country is a spot for diverse resources that can, potentially and significantly, be changed to economic benefits. Ethiopia owns a number of rivers and lakes; minerals of plenty in type and quantity; vast size of arable land; and renewable and non-renewable energy resources of untapped but promising potential. The economic advantages obtained from natural resources will have vital prospect for economic growth of the country when pooled with sound policies.

Recently the country has become an attractive hub for investment in many sectors especially in those the country took comparative economic advantages. Backed by investment incentives that the Ethiopian government is providing in the effort to attract investors, private investment of all kind becomes a recently promoted and booming phenomenon in the country. Ethiopia's involvement in the international trade arena has also been increasing time to time, though claiming a very minor share. Because the role of agriculture is momentous, the country's investment and trade potential is tuned by its resource and economic advantages in agriculture. Ethiopia is trading varies commodities with many countries. Its involvement, however, faces problems such as diversification and geographic narrowness.

Ethiopian economy is one of the fastest growing economies not only in Africa but also in the world. It has been growing continuously and considerably for the last consecutive ten years. The very recent effort in the process of economic growth and its achievement has being examined for whether the proper and priority goals at the expected level are attained. As one of the poorest countries in the world with a population of poor majority, any economic activity in the country is expected to be planned and measured by its achievement in poverty reduction and hence escalating living standards. The contribution of the recent economic growth in reducing poverty and enhancing living standard of the poor is counterbalanced by the widening income inequalities, the continuously rising cost of living and the distending unemployment and underemployment. The country is experiencing a historic economic growth of auspicious and prospective but it is only slightly transformed in reducing poverty and bettering living conditions.

This chapter presents a general overview of the Ethiopian economy and provides a descriptive analysis on its growth determinants. It gives a brief discussion on the structure of the Ethiopia economy. Economic growth of the country and its role is also examined. Fiscal condition of the country is also briefly overviewed. Moreover, it assesses the country’s international trade and investment potentials, performance and challenges. Likewise, natural resource and energy resources potential of the country is briefly discussed as well. The incidence and causes of poverty in Ethiopia is concisely analyzed as well. Lastly, a descriptive analysis on the determinants of economic growth in the country also briefed.

2.2. Overview of the Ethiopian Economy

2.2.1. Ethiopian Economy: A Historical Overview

Ethiopian political economy can be overviewed by looking at economic policies and performances of the three regimes since when data is available. These are the Imperial Regime (pre-1974), the Derg Socialist Regime (1974-1991) and the EPDRF Regime (Post-1991). During the periods under each regime, different economic policies and strategies were followed and these had partly explained the performance of the economies under respective regimes.

2.2.1.1. The Imperial Regime (1930 to 1974)

During the period 1930-1974, Ethiopia was under imperial system ruled by King Haile Sillase I. This period marked for imperial economic set up in which land was the most critical economic resource. Minority land aristocrats and majority peasants (tenants) were the major socio-economic agents. (Geda, 2007) Land was mainly owned by small land lords and in the tenure system, peasants provide its labor on the land and pay part of production to land owners.

There wasn't economic planning and structured development policies prior to 1957. Since then, however, three major development plans were formulated and put into implementation under supervision of the imperial government. The First Five Year Plan (1957-1961) was the first in its kind in the country and it had tried to lay down a foundation for a structured economic base. (Wood, 1977) The plan mainly emphasized the improvement of infrastructures, especially of road and establishment of important institutions like banks. The Second Five Year Plan (1963-1968) went further in concentrating on productive aspect of the country and it emphasized on specific projects in manufacturing and hydroelectric power generation. (Wood, 1977; Tesfaye, 1992) Planning unit was established aiming for further organized coordination of economic and social policies. Consequently, planned budgeting was started and reinforcement of the Central Bank and Commercial Bank of Ethiopia was followed. Government accentuated on establishment of critical institutions and industries in both plans. (Tesfaye, 1992) The Third Five Year Development Plan (1968-73) was launched in announcing the priority given to agriculture. This was as a reflection to the rising price of food imports and the need to improve rural income. Following this, commercial agriculture was highly promoted. (Wood, 1977)

The economic policies in the Imperial period were tuned under free market and liberal ideology. Market based economic system was followed and the relative economic and political stability paved the way for a structured and secured economic activities. The establishment of institutions like banks supported financing and product markets. Land was privately-owned and an active land market was developing at the end of the regime. Import substitution industrial policy was highly encouraged and the implementation of the plans attracted foreign direct investment and boost manufacturing sector. (WB, 1985 as cited in Gebreyeesus, 2013; Geda, 2007) Private investment was encouraged and protection of infant manufacturing industries was endorsed through strategies like high tariff, banning of certain imports, provision of credit and fiscal incentives. Following this, small scale handicraft; and modern medium and large manufacturing subsectors were established. (Geda, 2007; Gebreyeesus, 2013)

The development plans and economic measures followed during the period helped in promoting capital accumulation and economic growth. According to Geda (2007), these plans were successful in bringing an average economic growth rate of 4% between 1960 and 1974. The plans, nevertheless, were too ambitious to implement its low and modest level of investment and growth rate targets and failed to stimulate self-sustaining growth. (Wood, 1977) Furthermore, they failed to create strong industrial base and the manufacturing sector was characterized by duality and limited to constitute only few light industries which were seldom inter-related with other sectors. (Geda, 2007; Gebreyeesus, 2013)

According to Geda and Degefe (2005), the educated elite started to provoke against the regime and its land aristocracy which worsen the lives of the majority who depend on subsistence farming. Following a mass protest across the country, the military overthrow the emperor in 1974 and formed a Socialist government. Following Clapham (1988), Geda and Degefe (2005) noted that the misery the regime caused to the rural population; and its alienation from all “social strata” including military, bureaucracy, urban dwellers and elites are considered as the fundamental causes for the downfall of the regime.

2.2.1.2. The Derg Socialist Regime (1974 to 1991)

Following the downfall of the long lasting Imperial rule, Ethiopia plummeted under the control of a military government called Provisional Military Administrative Council (PMAC), also known as Derg. It immediately declared a socialist state. For almost seventeen years, the country fell in to an economic system that socialized production and distribution. (Geda, 2007) Centrally planned economy was the motto and the economy was highly controlled and market forces were repressed. (Altenburg, 2010; Geda, 2007) The country completely transformed in to a command economy by abolishing the infant private sector and nationalizing private property. (Gebreyeesus, 2013) The emerging free land market was brought to an end and land was nationalized. The centrally planned government wiped out private land tenancy and distributed land to peasants freely. Aiming to facilitate service provision and land use, peasant cooperatives and groups were forcefully formed. However, peasants were granted only "usufruct" right on the land. (Altenburg, 2010)

As one of the measures taken in restricting the private sector and the market, the modern medium and large manufacturing enterprises, which were established in the previous regime, were nationalized. Private investment was restricted to only one venture with a ceiling capital of quarter of a million USD. Moreover, price was controlled and fixed exchange rate system governed the foreign currency exchange market. (Gebreyeesus, 2013) Central planning body was established and the Ten Year Perspective Plan was formulated in 1984. It was meant to promote import substitution and labor incentive industries and public sector investment. (WB, 1995 as cited in Gebreyeesus, 2013)

According to Geda and Degefe (2005), the growth performance of the regime was devastating. The economic growth was decelerated to 2.3% per annum between 1974/75 and 1989/90. This can be explained by the hostile political environment; the nationalization measures, the interference in industrial and agricultural activities, and the outbreak of drought in 1984/85. According to Gebreyeesus (2013), state owned enterprises in general and the modern medium and large scale enterprise in particular become weak and failed to boost its number of establishment and even maintain its employment. This is mainly because of the hostile policies towards private sector; inefficiency of the public sector; and the outbreak of civil war.

Though it is late, the regime shifted its centrally planned command economic system to a more liberal mixed one in 1990, a year before its removal from power. (UNIDO, 1991 as cited in Gebreyeesus, 2013) According to Geda and Degefe (2005), however, the deceleration in growth and worsening economic set up together with a mass public resistance and discontent and external push, led the regime to be overthrown by coalition of rebel groups called the Ethiopian People Revolutionary Democratic Front (EPRDF) in 1991.

2.2.1.3 The EPRDF Regime (since 1991)

After seventeen years of trying fight with the Derge regime, the Ethiopian People's Revolutionary Democratic Front (EPRDF) took power in 1991. It had similar economic and political ideology with the previous regime during its struggle. However, following acquisition of power, it changed its ideological make up from building more of a socialist economy to a liberal and market based one. This is mainly due to the shift in the world economic ideology towards neo-liberalism and market radicalism and because of the fall of USSR. (Geda, 2007)

In 1991/92, the EPDRF government announced liberalization policy and various reform programs which aimed at weakening national bureaucracy by refreshing programs and reducing expenditure. (Geda, 2007) Following this, the government implemented three phases of structural and economic reform programs sponsored by the World Bank and International Monetary Fund. In the first phase (1992/93-1994/95) different measures were undertaken including liberalization of prices and foreign exchange rate; rationalization of public expenditure; reduction of the maximum import tariff; and removal of subsidies and export tax rebate. The second phase of economic reform (1994/95-1996/97) aimed at promoting private participation and restricting the role of state in the economy. The third economic reform (1996/97-1998/99) committed government to attain macroeconomic growth and stability while strengthening the liberalizing policies and measures. (Gebreyeesus, 2013)

In its egalitarian policies, however, the government took measures in controlling land ownership. In addition, strategic industries and services like telecommunication and electric power remained public. The government followed a pro-poor budgeting especially in the development of agriculture, education, health, water and road. (Altenburg, 2010) Institutions were liberalized and state owned enterprises were privatized. Inter-bank market for foreign exchange was established and the interest rate was freed, government setting only the floor. Moreover domestic currency was devaluated in the effort to promote export. (Geda, 2007) In 1989, export promotion strategy was adopted in addressing the lack of export diversification and hence, expanding exports. (Gebreyeesus, 2013)

According to Geda and Degefe (2005), these reforms were undertaken considering the internal and international challenge to socialism; the opposition towards government's stand on the country's unity and its ideology of ethno-linguistic based federalism; and shortage of foreign exchange. The growth performance was astonishing during these reform periods. On average, the country's GDP grew at 3.18 percent per annum during 1992-1999.

The current economic system can, generally, be characterized by private-led market oriented economy but with strong state role. The role of government stretches from development of infrastructure and human resource to ownership of selective industries and capacity building activities for the private sector. The industry is dominated by domestically owned private enterprises as the domestic private sector is believed to be the key player. The government uses policy instruments like direct support for selected export sector and provision of economic incentives in promoting the industry in the country. (Gebreyeesus, 2013) Since 2005, however, the government developed mistrust of the private sector for political reason as it were about to be defeated in the 2005 national election. Since then, it showed mixed signals of market based and "socially inclusive transformation in one hand and restrictive political environment on the other".

(Altenburg, 2010) The hand of the state became longer than before and it eventually dictated economic system based on the concept of “developmental state” by looking its economic success in countries like China.

2.2.2. The Structure of the Ethiopian Economy

The structure of the Ethiopian economy can be seen by disaggregating its Gross Domestic Product (GDP) in to three main sectors, namely agriculture, industry and service sectors. Table 2.1 clearly presents the share of these sectors from the total GDP since when the country’s economy has been exhibiting robust growth.

The GDP of Ethiopia was almost 10 billion USD in 2004 and it folds itself two times to reach almost 46 billion USD in 2013 and it rose to 49.86 billion USD in 2014. Similarly, the per capita income substantially rose from 137.3 USD in 2004 to almost 548 USD in 2014.

Table 2.1 Share of GDP by Sector

Year	GDP (USD Billions, Current Prices)	Per Capita Income (USD, Current Prices)	Percentage Share (%) of sectors from GDP		
			Agriculture	Industry	Service
2004	9.959	137.315	42	14	44
2005	12.183	164.046	45	13	42
2006	15.004	197.434	46	13	42
2007	19.340	248.851	45	13	42
2008	26.345	331.607	48	11	41
2009	31.859	392.411	49	10	41
2010	29.371	354.077	45	10	45
2011	31.373	370.254	45	10	45
2012	42.631	491.325	48	10	42
2013	45.999	517.713	45	12	43

Source: Own compilation based on World Bank (2015a)

Agriculture, which supports more than 84% of the country's population, shares 45.7% from the country's GDP on average between 2004 and 2013. Its contribution has declined especially when it is compared to its average share of 52% in 1990s. (Balcha, 2011) The share of the industry slightly rose from the 1990s average of 9.9% to 11.6% during 2004-2013. This reveals that the sector is still underdeveloped despite the significance it would have in transforming the traditional economy. The contribution of the service sector to GDP rose from an average of 33.5% in 1990s to an average of 43% in the last ten years since 2004. Service sector is growing fast and it is about to precede the traditionally dominant agriculture. The economic structure of the country is more or less dominated by the traditional agriculture and the growing service sector. This, by itself, is unhealthy for structural transformation. It affects industrial development of the country as the decline in the contribution of agriculture couldn't be explained by the rise in the industry. Thus, it can be said that the process of structural transformation in the country is very slow.

The role of agriculture to the development of the country is indisputable. This is more convincing as the country's comparative advantage favors more towards agricultural production. It has also been given considerable emphasis, as a leading sector, that it can play a key role in the process of development and structural transformation in developing countries. Nevertheless, low agricultural productivity combined with increasing population and land degradation made the country dependent on foreign aid especially of food. (Pender and Gebremedhin 2007 as cited in Kassie et al, 2011) According to USDA (2014), Ethiopia remains one of the largest recipients of food aids, receiving 27% of the total food aided to Sub-Saharan Africa. Similarly, the country continuously experience fluctuation in agricultural production as it heavily depends on rainfall.

Thus, high growth of agricultural production is pivotal and on the virtue of increasing employment and reducing poverty and hence paving ways for food self-sufficiency. Mellor and Dorosh (2010) suggested that six percent growth in agricultural production through increasing productivity is feasible for economic transformation in the country.

2.2.3. Economic Growth in Ethiopia

Ethiopian economy is one of the fastest growing economies in the World. According to data from World Bank (2015a), the country's GDP continuously grew at robust average rate of 10.9% per annum between 2004 and 2013. This is considerably high when compared with the 1990s average growth rate of 2.81%. Figure 2.1 clearly demonstrates the distribution of the growth among the three main sectors. Accordingly, industry and service sector registered a relatively similar average growth rate of 13.01% and 12.6% between 2004 and 2013 respectively. During the same period, agriculture grew by 9% on average. In order to attain a healthy economic development and strong base for structural transformation, the growth of the industry should further be enhanced and that of the service should be checked.

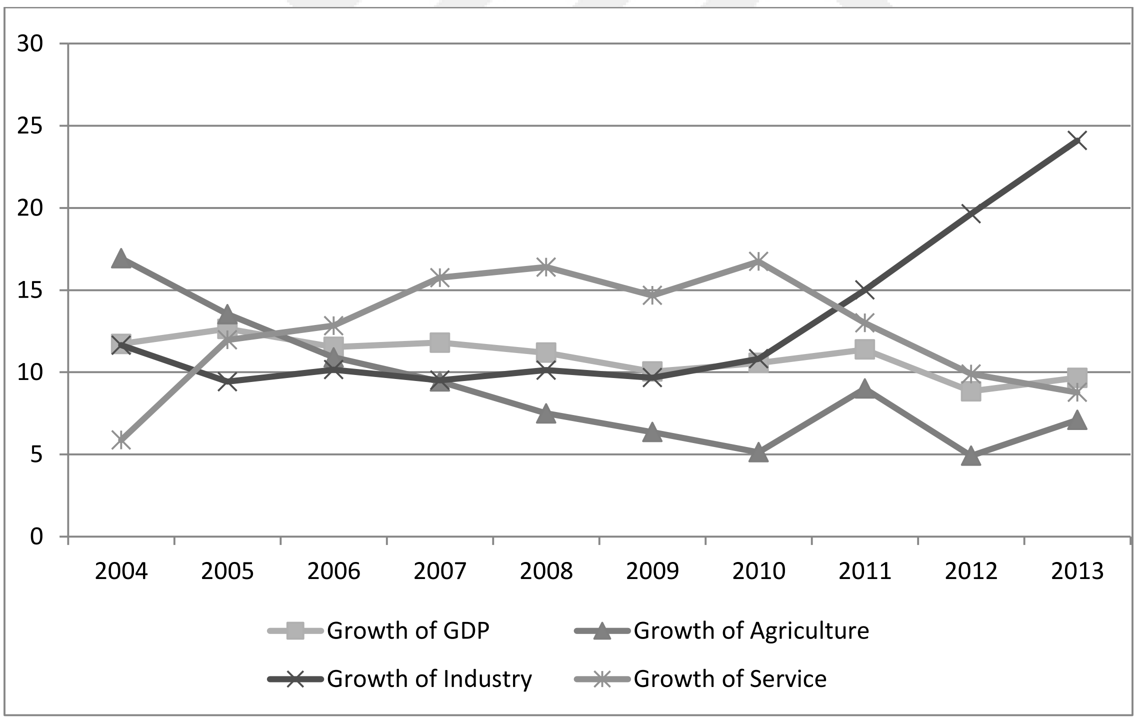

Figure 2.1 Growth of GDP
Source: Own Computation from the World Bank (2015a) and IMF (2014)

Economic growth may contribute to development process of countries' economies in one way or the other. However, it can never guarantee economic development. While growth shows quantitative changes, development, among others, captures improvement in quality of life, which is of course the real change. In this regard the growth of the country's economy has being counterbalanced by the rise in the price of commodities. Though slowing recently, the country is experiencing its historic level of inflation mainly caused by continues rise in cereal commodities. (Loening et al, 2009) According to a report by African Economic Outlook (2012), the country level inflation reached its highest level of 29.3% in 2012. Geda and Tafere (2008) argue that money creation way of government budget financing increased money supply and hence took the lion's share in triggering inflation in the country.

The growth of the economy also looks short of absorbing the growing labor force especially in urban areas of the country. This is partly explained by the rate of urbanization in the country which is one of the highest in Africa. (Kibret, 2014) The 2007 National Census revealed that 3.8% of the total population is unemployed. Similarly, 17.5% of the total labor force in urban Ethiopia is unemployment in 2012. The situation is a little strange as the concentration of urban unemployment is higher among relatively well-educated youth that stays unemployed for about four years on average. (Serneels, 2007) Although slight improvement in urban unemployment had observed recently, the performance of the economy in creating jobs is still sluggish. (Kibret, 2014)

In addition, the economic growth which continued for decades could not improve the living standard of the mass, especially of the poor. Based on the 2014 Human Development Report, Ethiopia placed only above 13 countries in Human Development Index. In addition, the 2011 Multidimensional Poverty Index put the country at the bottom of countries' ranking based on poverty. According to World Bank (2015a), more than two third of its population earn below $2 a day. Moreover, Bigsten et al (2002) indicate that situations are worsening as the potential poverty reduction due to economic growth is even encountered by deteriorating income distribution in the country. Detailed analysis on this part is given in Section 2.2.8.

2.2.4. Fiscal Conditions in Ethiopia

Fiscal indicators consist of government revenue and expenditure; external grant and debt; and fiscal deficit. Increased by 15% from previous year, the country's budget for 2014/15 fiscal year (which started in July 8 each year) was around 9.2 billion USD. Around 64% of it was directed to development of infrastructure, energy, housing, education, health facilities and state companies. (KPMG International Cooperatives, 2014) This reflects the fiscal policy the government follows in promoting development.

Table 2.2 Government Financial Indicators as percent of GDP

Year	Government Revenue	Government Expenditure	External Debt	Grants	Fiscal Deficit
2004[1]	16.2	23.9	79.9	4.9	-3
2005	14.7	23.5	54.0	4.6	-4.5
2006	15	22.5	43.6	3.7	-4.7
2007	12.8	20.9	12.9	4.4	-3.7
2008	12.1	19.1	11.2	4	-2.9
2009	12.1	17.4	11.1	4.3	-0.9
2010	14.2	18.8	18.7	3.3	-1.3
2011	13.7	18.6	24.4	3.2	-1.6
2012	13.9	16.8	20.4	4.2	-1.2
2013	14.6	18.1	21.4	4.2	-2
2014	14	17.7	25.4	NA	-2.6

Source: Own computation based on National Bank of Ethiopia (2014) and African Economic Outlook (2002)
NA = Not Available

1. Ethiopian fiscal year ends in July 7 and it is used except for the fifth column starting 2005 on which is a fiscal year that ends in December 31 applied.

Table 2.2 indicates that on average total government revenue amounted to 13.94% of GDP between 2004 and 2014, while grants share more than 4% of GDP between 2004 and 2013 on average. Similarly, total government expenditure took an average of 19.75% of GDP between the same years. Its share, however, drops from almost 24% in 2004 to 17.7% of GDP in 2014. The country's external debt was almost 80% of GDP in 2004 and though still high, drops to 25.4% in 2014. The budget deficit is negative throughout the period and it amounted to 2.6% of GDP in 2014.

The country's fiscal condition is highly dependent on external aid and borrowing. Its external debt alone took more than quarter of the gross domestic production in 2014. Development projects are mostly financed through external borrowings and donations and it depends on willingness of donors and lenders and on their prerequisites. In general, fiscal condition of the country is partly determined by external factors as indicated by the budget deficit and debt amount. Moreover, Balcha (2011) pointed out that weather condition and the ability to mobilize revenue also determine the fiscal condition of the country.

2.2.5. Natural Resource and Energy Resource Potentials in Ethiopia

With a total coverage of 1.14 million square kilometer, Ethiopian land surface is composed of Precambrian, Mesozoic and Cenozoic rocks. The Precambrian rocks host economic metallic minerals like gold, platinum, nickel, tantalum, copper, lead, zinc, phosphate, iron ore, gemstone and marbles. Natural fuel minerals, metallic ores and cement raw materials comprises of the Mesozoic rocks. Most of world class industrial minerals such as potash, rock salt, soda ash, opalized stones, diatomite and cements constitute the Cenozoic rocks the country endowed with. (MoME, 2009)

The development and contribution of mining sector to Ethiopian economy is rising albeit very recently. Gold, columbium-tantalum, cement, gemstone, steel and iron, silica sand, soda ash and marble mentioned among the most important mineral productions in the country. (Yager, 2013) As can be clearly indicated in Table 2.3, the production of Gold reached 10,700 kilograms in 2011 and it is expected to boost as new reserves has been discovering recently. In this regard, major gold reserves were discovered in 2011 and 2014 which amounted to 550,000 kg and 30 to 40 tons respectively. (Bekele, 2014 and Yager, 2013) Ethiopia also possesses immense potential in cement production with annual capacity of around 7.9 metric tons per year. As of 2011/12, the production in mining sector was expanded by 12.7% from 2010/11 with an investing capital of more than $7 Million. (International Cement Review 2010, 2012 as cited in Yager, 2013)

However, domestic production of industrial minerals is short of national demand in quantity, quality and type. Its supply is of in poor quality and consistency. This forces local manufacturers to import raw materials from abroad, despite existence of extensive deposit. In addition, lack of sufficient technical information and central facilities and small size of internal market discourage investment in existing deposits and new ventures. Similarly, the mineral export sector is at infant stage despite huge potential demand especially from countries like Saudi Arabia and South Africa. (Morgan, 2007) In addition, it is heavily reliant on gold export which accounts for 90% of total mineral exports. (Bekele, 2014; NBE, 2013) The reliance on a single item in export needs diversification. Likewise, it is on the virtue of widening internal market to enhance qualitative production supported by central facilities and information inputs. This will in turn enriches further development of mining in the country.

Table 2.3 Structure of Mineral Production, 2011

Mineral	Measurement	2010	2011	Annual Capacity
Gold	Kilogram	4,936	10,700	NA
Columbium-Tantalum	Kilogram	252,433	285,000	NA
Cement	metric tone	2,200,000	2,300,000	7,866,000
Gemstone	Kilogram	3,545	15817	NA
Silica Sand	metric tone	70,250	71,000	180,000
Soda Ash	metric tone	1600	1,600	20,000
Marble	square meters	201,000	201,000	NA
Steel and iron	metric tone	390,000	350,000	412,000

Source: Own Compilation based on the 2011 Minerals Year Book (Yager, 2013)
NA: Not Available

Biomass, to a slight extent hydropower, constitutes the principal indigenous energy sources in Ethiopia. Biomass fuel, used mainly for cooking, covers 90% of the total energy consumption in the country. Among other factors, this is ascribed to deep rooted poverty, deprivation of access to other sources and technological backwardness. It is, hence, resulted in massive depletion of indigenous biomass sources of the country. (Guta, 2012, MoWE, 2011)

As can be shown in Table 2.4, the country is endowed with wide range of renewable energy sources. Hydroelectric, solar, diesel and geothermal energy sources are in the urge of development as to provide a choice for sustainable resource use and access to the majority. However, the exploitation of such resources is less than what is nationally demanded for use. For instance, from the 45,000 MW hydroelectric power capacity in the country, only less than 5% was exploited by 2013. Similarly, energy utilization from wind, solar and geothermal sources covered only less than 1% in 2013 respectively. On the other hand, the demand for electric power consumption is increasing by 25% annually. (MoWE, 2013) Thus, development of renewable energy resources, above all other energy sources, is at its highest advantage in countries such as Ethiopia whose non-renewable energy resources are very limited. In addition, its role in increasing energy security, saving foreign currency and minimizing environmental degradation is significant.

Table 2.4 Energy Resource Potential in Ethiopia

Energy Resource	Exploitable Potential
Woody Biomass	767 million ton
Crop Residual and Animal Waste	38 million ton/year
Hydropower	45,000 MW
Solar	5- 6.5 Kwh/ M^2/day
Wind	3.5-5.5 M/S
Geothermal	5,000-7,000 MW
Coal	70 million ton
Natural Gas	7 TCF

Source: Ministry of Water and Energy (2011)

Table 2.5 precisely presents the capacity and status of renewable energy projects which are implementing in Ethiopia since 2011. The recent developmental efforts in enhancing current power generation capacity of 2000 MW to 10,000 MW and access to electricity from 41% to 75% by 2015, though ambitious, promises alternative source of power not only to domestic demand but also for foreign market. (MoWE, 2011) Contrariwise, hydroelectric development has its own controversial issues. Despite relative environmental benefits regarding emission of greenhouse gases, large scale hydroelectric power projects impacts on ecosystem and local people. (Sternberg, 2008; WWF, 2005; WCD, 2000 as cited in Hailemariam, 2011) According to a study by Hailemariam (2011), Gilgel Gibe III hydroelectric project, for example, displaced local people without proper compensation for some member of the community. In addition, it interrupts socioeconomic relations crossing Gibe River and intrudes wildlife habitats. Thus, a general public participation and pre-project environmental feasibility assessment is highly required to compromise the benefit from development and environmental and social costs and hence ensure public consensus and sustained development.

Table 2.5 Renewable Energy Projects, 2011-2015

Source of Energy	Projects	Installed Capacity, MW	Status
Hydroelectric	4	7471	Under construction
Hydroelectric	7	1320	Committed
Wind	1	120	Under construction
Wind	6	752	Committed
Geothermal	1	470	Committed
Co-generation/ sugar factory	3	104	Committed

Source: Ministry of Water and Energy (2013)

2.2.6. International Trade Performance in Ethiopia

With more than 84% of its population live in rural areas and almost half of its GDP obtained from agriculture in 2011/12, Ethiopia is said to have agrarian economy. (CSA, 2010; NBE, 2013) Furthermore the country is endowed with favorable climate with 12 river basins, 18 national lakes and 3.7 million hectares of potentially irrigable land. (Embassy of Ethiopia in USA, 2006) This is a clear indication of the fact that made the country comparatively advantageous to produce and export agricultural products. In accordance with this, the country has been exporting agricultural products which accounted for more than two third of total export values in 2011/12. (NBE, 2013) It can be deduced from Agricultural Development Led Strategy (ADLI), which Ethiopian government set as development scheme, that the leading sector for economic development in Ethiopia is agriculture. Following this, the foreign trade policy of the country is formulated in accordance with giving emphasis to the importance of agriculture.

As one of its major objectives, Ethiopia's Development Strategy also encompasses the country's relation with the world through trade. In this regard, the country follows export oriented development strategy to increase and diversify its exports. Export diversification has been one of the major development plans for almost 40 years. (Lakew, 2003) In addition, the Growth and Transformation Plan (GTP), which was adopted in 2010, gave utmost attention for foreign trade. Accordingly, it stresses the importance of import substitution and expanding exports, aiming to reduce trade deficit the country encountered for years. (Ciuriakand Preville, 2010) According to MoFA (2007), Ethiopia's foreign trade policy possesses major objectives of developing and ensuring international market particularly for agricultural products; generating sufficient foreign exchange; and improving the efficiency and international competitiveness of domestic producers.

Nonetheless, it seems that the plans and strategies are sound and striving but hard to infer for being practical. For instance, the Growth and Transformation Plan (GTP) sets ambitious goals hard to achieve. It was assumed that the economy would grow at a rate of 11.4 % per annum targeting to double the GDP in 2014/15 from its level in 2010/11 (IMF, 2014). However, according to IMF (2014), the economy grew by 10.12% on average between 2010 and 2013. The figure is much less when IMF's calculations are considered. This looks relatively lower from what was expected to boost domestic production and hence export.

The country's export reached 3.25 billion USD in 2013/14 fiscal year. However, its items are restricted to few agricultural commodities. As can be indicated in Table 2.6, coffee, oilseeds, leather and leather products, pulses, meat and meat products, fruits and vegetables, live animals and 'chat' constitute more than 72.3% of the total export in 2011/12. (NBE, 2013) A representative indicator of this is coffee which dominates the

Ethiopian export history for almost five decades. It accounted for more than half of the total exports during the same period, albeit a relatively lower share recently. (ITC and SECO, 2001) Stating the presence of promising opportunities for export diversification, a study by Lakew (2003) reveals that allowing for sound export development strategy; strengthening export support institutions; enhancing export incentives and e-commerce possibilities; and ensuring tariff free access possibilities will assist to widen the export base in the country.

Table 2.6 Values of Major Export Items, in millions of USD (in Ethiopian Fiscal Year)

Particulars	2011/12		2012/13		2013/14	
	Value	Share (%)	Value	Share (%)	Value	Share (%)
Coffee	833.1	26.4	746.6	24.2	714.4	21.9
Oilseeds	472.3	15.0	443.5	14.4	651.9	20
Leather & Leather products	109.9	3.5	121.1	3.9	129.8	4
Pulses	159.7	5.1	233.3	7.6	250.7	7.7
Meat & Meat Products	78.8	2.5	74.3	2.4	74.6	2.3
Fruits & Vegetables	44.9	1.4	43.9	1.4	45.9	1.4
Live Animals	207.1	6.6	166.4	5.4	186.7	5.7
Chat	240.3	7.6	271.3	8.8	297.3	9.1
Gold	602.4	19.1	578.8	18.8	456.2	14
Flower	197.0	6.2	186.7	6.1	199.7	6.1
Others	207.1	6.6	215.4	7	247.4	7.6
Total	3152.7	100	3081.2	100	3254.8	100

Source: Ethiopia Revenue and Customs Authority as cited in NBE (2013)

Ethiopia’s import reached more than $13 billion in 2013/14. Raw materials, consumer commodities, capital goods, fuel and semi-finished items constitute Ethiopian import composition. As clearly indicated in Table 2.7, however, almost 28% of the country’s expenditure on imports in 2013/14 went to consumer goods. This is a clear indication that the country is spending big portion of its hard currency on consumer goods which can't directly be used for further production. In other words, significant amount of hard currency obtained from export and other sources has been merely spent on consumption rather than production. The country needs to further promote its import substitution and export oriented strategies of industrialization in order to increase its competitiveness and hence narrow the current account deficit which, according to IMF (2014), reached 7.1% of GDP in 2013/14.

Table 2.7 Values of Major Import Items, in millions of USD (in Ethiopian Fiscal Year)

Categories	2011/12		2012/13		2013/14	
	Value	Share (%)	Value	Share (%)	Value	Share (%)
Raw Materials	199.7	1.8	145.6	1.3	165.2	1.2
Semi-finished Goods	1957.2	17.7	1753.9	15.3	2098.1	15.3
Fuel	2124.8	19.2	2163.9	18.9	2543.2	18.5
Capital Goods	2961.7	26.8	3572.6	31.2	4500.3	32.8
Consumer Goods	3531.7	31.9	3452.4	30.1	3834.1	27.9
Miscellaneous	286.3	2.6	378.9	3.3	581	4.2
Total Imports	11061.2	100	11467.3	100	13721.9	100

Source: Ethiopia Revenue and Customs Authority as cited in NBE, 2013

Ethiopia's trade partners are limited to few countries and its geographic concentration of trade remains high. According to IMF (2014), in 2013, more than half of the country's imports were originated from China, European Union, Saudi Arabia and India. Similarly, more than half of its exports reached to European Union, China, Saudi Arabia and USA in the same year. (European Commission, 2014) With regard to this, Ethiopia's geographic concentration of trade was 39 % between 1970/71 and 2001/02. (Lakew, 2003) In 2012, for example, more than 30% of the country's export reached only three destinations, namely China, Germany and Somalia. In addition, China, Saudi Arabia and India were the only sources for 44% of its import in the same year. (IMF, 2013 as cited in DFAT, 2014) Likewise, the country trades with European and Asian countries more than that of its African counterparts, which shares only 21.3% of export and 2.7% of its imports in 2012/13. (NBE, 2014) This looks quite low relative to its geographic proximity.

The problem of narrowness in geographic concentration of trade definitely affects the country's trade balance and increases its dependency on few partners. This in turn impacts its competitiveness in international market and thus decision making. Export diversification is highly desirable to widen the geographic narrowness alongside with a market penetration strategy. (Lakew, 2003) This is more convincing especially when the country could take advantage of trade with nearby countries in Africa and the Middle East.

Ethiopia's participation in international trade has faced varies bottlenecks which hinder its development and potential contribution to the economy. According to Ciuriak (2010), the macroeconomic policy mix by which the country uses exchange rate to stabilize price undermine competitiveness of exports by making effective exchange rate to rise. In addition, high trade costs; private sector underdevelopment, the inefficiency of infrastructure services like telecommunication, finance and transport; thick borders with its neighbors; and high tariffs applied by potential African partners limit the growth and development of foreign trade in Ethiopia. (Ciuriak, 2010)

2.2.7. Investment in Ethiopia

The national economic policy of the country is explained in the Growth and Transformation Plans. The plans have put major economic goals that urge government to address major market failures; identify strategic growth sectors; set ambitious infrastructural development programs; meet the Millennium Development Goals; and achieve middle income status by 2020-23. The investment program that is encompassed in these term based plans contains industry policy tools like targeting financial support; setting up public corporations; trade policies which favor export oriented and import substitution industries, tax incentives, strategic government procurement, public investment in infrastructure, and regulatory exception. These are meant to attract both domestic and foreign direct investment. (Assefa et al, 2013)

As of Ethiopian investment policy, participation of the private sector in investment is backed by various regulatory and fiscal incentive schemes such as guarantee against nationalization; full repatriation of profits, dividends, principal and interest payments out of Ethiopia; the right to employ expatriate experts and management staff; customs duty exemption on imported capital goods; construction materials; and spare parts worth up to 15% of the value of imported capital goods; and income tax exemption up to 2 to 9 years. Likewise, the country has signed Bilateral Investment Promotion & Protection Treaties with 30 countries and Double Taxation Avoidance Treaties with 18 countries. (EIA, 2013) This all disclose the way the policy follows to encourage the participation of domestic as well as foreign investment in the country. However, these incentives couldn't be found effective in attracting investors to periphery areas. Investment is concentrated in and around Addis Ababa, making it "Metropolis" and Regional States are unfairly remained "Satellites" that deprived from the benefit. (Abebe, 2014)

Ethiopia, rich in natural and agricultural resources together with favorable weather condition, is suitable for investment in agriculture, agro processing and mining. The country possess huge investment potential in agriculture and agro processing such as horticulture and floriculture, sugar plantation and processing, rubber tree plantation, pulses and edible oil seed processing and diary development. The emphasis for agricultural investment is emanated from the developmental strategy the economy follows to gradually shift its structure from agricultural to industrial set up. However, private investment in Ethiopia is skewed to service sector that made the link between agriculture and industry so limited that would otherwise feed each other in the process of structural transformation. (Abebe, 2014)

In recent times, the country has becoming a hub for investment in manufacturing of garment and leather products owing to a relatively cheap labor force. (Wolde, 2007, EIA, 2013) Its potential in labor intensive production is considerable and this provides opportunity in integrating to the “Made in the World” production system that is leaving China and East Asia countries due to raising wages. (Assefa et al, 2013)

Regardless of only a recent development, mining sector provides another potential for investment in exploring and exploitation of minerals, especially of gold, iron ore, potash, tantalum, gemstone, gypsum, marble and granite. (Wolde, 2007, EIA 2013) With a home of wonderful historical places and cultural diversities, the country also provides economic opportunities for tourism investment. According to Doing Business in Ethiopia – Precise Consult International (2013), investment in health sector activities like medical center and pharmaceutical manufacturing is also been encouraged as to fill the supply gap for the growing demand for health care in Ethiopia that resulted due to rising educated segment of the population and high level of urbanization. (EIA, 2013)

Although rapidly growing both in size and composition, investment in Ethiopia has encountered with several challenges that made it hard to involve with in and hence hinder its prospective development. Investors face with long bureaucratic procedures, bad governance and corruption which are among major determinants of low investment in Ethiopia. According to a study by Federal Anticorruption Commission, 71% of 350 respondents from foreign investors believed that running business in Ethiopia is difficult because of corruption and complex procurement. (Abebe, 2014) In addition, the World Bank Easy of Doing Business report ranked Ethiopia 132nd out of 187 countries in 2015. (WB, 2015b) This deters not only current investment opportunities but future promises by shading the country’s infant developmental attempts with bad look. Likewise, underdeveloped financial market, low saving, inadequate infrastructure, concentration of investment to only few areas, high transaction costs, nominal investment and rushing to service sector are also notable challenges discouraging the development and contribution of the sector. (Woldemeskel, 2008, Abebe, 2014) In addition, ethnic based preference in accessing investment opportunities is becoming a growing phenomenon in recent times.

2.2.8. Poverty in Ethiopia

Ethiopia is one of the world’s poorest countries and majority of its people are amongst the poorest in the world. (Bigsten et al, 2002; Diao et al, 2005; Kedir and McKay,

2003) The persistence of poverty is high especially in rural part of the country. (Bogale et al, 2002) As can be clearly indicated in Table 2.8, eight out of ten people were multidimensional poor in 2011 and deprived from more than two third of such welfare measure as education, health facilities, clean water, proper sanitation and cooking fuel. More than 32% and 29% of the population earns $1.25 and $2 a day respectively. Considering the national poverty line, 29.6% of Ethiopians were poor in 2011, earning only 0.5 USD a day. Moreover, the country was ranked 173rd from 186 countries in Human Development Index in 2014, accomplishing below the Sub-Saharan average. These all are indications for the low level of life expectancy; educational attainment and earned income the people are living through.

Various factors contribute in explaining poverty and its severity in Ethiopia. Rural poverty is mainly caused by low level of and wide fluctuation in agricultural production; inefficient and insufficient agricultural marketing; underdeveloped infrastructures; environmental degradation and shocks; and lack of participation of the rural poor in decision making. (Namara et al, 2010; Bogale et al, 2005; Enquobahrie, 2004; Diao, 2005; Grant and Marcus, 2008) Low education, poor health, high population growth, unemployment and weak institutional structures have best expound causes behind poverty in urban areas of the country. (Kedir and McKoy, 2003; Enquobahrie, 2004)

Table 2.8 Poverty in Ethiopia

Year	Multidimensional Poverty Index (MPI)	MPI, Headcount, (%)	Percentage of Income Poor ($1.25 a day, PPP)	Percentage of Income Poor ($2 a day, PPP)	Percentage of Poor (National Poverty Line)	Human Development Index (Ranking)
2011	0.564	87.3	32.89%	64.54%	29.6%	173

Source: World Bank (2015a) and UNDP (2014a and 2014b)

The growth in the country’s economy and its failure in entertaining expected reduction in poverty can best be demonstrated by the widening income gap between the rich and the poor. According to Leite et al (2009), poverty reduction in Ethiopia performs disappointing accompanied by a surge in income inequality. The potential poverty reduction due to economic growth through increased real income is counterbalanced by worsening income distribution. (Bigsten et al, 2002) According to World Bank (2015a), Gini coefficient for Ethiopia increased from 0.298 in 2005 to 0.336 in 2011, exposing the high and rising incidence of income inequality. (Geda and Yimer, 2014) The inequality is wider in urban areas of the country. It is claimed that such a level shows a relatively fair and expected distribution of income in a country such as Ethiopia where its economy is at its preliminary phase of growth. However, Asayehgn (2011) argues that unless Ethiopian population is living under undetected extreme poverty or “the economy is controlled by the state inducing minimal differences in wages or instituting poverty-reducing public programs”, literature doesn’t support such an income inequality coefficient in a country where the gap between poor and rich is widening. For instance, the income of the bottom 20% of the population was only 16% of the income of the top 20%. Moreover, income and wealth inequality across ethno-linguistic groups is significantly increasing recently which greatly threats the ‘social fabric’ of the country. (Geda and Yimer, 2014) In a country such as Ethiopia, where economic interests and success are directly linked with the degree of attachment and honesty to the ruling bodies and the level of corruption in smoothing short paths, inequalities of benefits and unfairness of gains are expected. The situation in the desperate and gloomy Ethiopia of today reveals the flaring income inequalities in a highly exemplifying way.

The country’s experience in deep poverty can also be explained by the rate of unemployment especially in urban areas. Unemployment and underemployment best portrays the youth and are among the critical socioeconomic problem facing the country. (Mulu, 2012) Ethiopia has one of the highest unemployment rates worldwide and one fourth of the labor force in the country was unemployed in 2012. Unemployment is high among the relatively well educated first time job seeker and one third of women were unable to find jobs in urban Ethiopia in 2012 (Wubie, 2012a; IMF, 2014) The hope for a stable livelihood after tedious and trying education life is vanishing among the youth and the economy is still under capacity to accommodate for the booming educated class.

According to Wubie (2012a and 2012b), rapid population growth; rural urban migration; absence of land justice; legal and policy problems; absence of off-farm employment opportunities; theory focused educational policy that has little relevance to the labor market; the choice for capital intensive technologies; nepotism and corruption; underdevelopment of the private sector; lack of knowledge and skill and lack of culture of work ethics and job creation has contribute a lot in elucidating the youth unemployment in the country. Unemployment caused varies socio-economic crises and it ends with creation of hopeless young generation that pessimistically views the benefit obtained from education. The youth in Ethiopia is desperate to find jobs that are suitable for the education level it attained. Such a prevailing harsh condition hinders the country in its endeavor for economic growth and the youth from contributing its creative and energetic mind in fighting poverty.

2.3. Determinants of Economic Growth in Ethiopia: A descriptive Analysis

For the last decade, Ethiopian economy has registered fast and continues and historic growth. The growth is also expected to continue for subsequent years. Then, a question of most interesting will follow: what are the causes behind such a ‘growth miracle’? This section partly has a response on that. A comprehensive discussion is provided on the main determining factors of economic growth in Ethiopia. Economic policies and macroeconomic conditions; domestic investment; human capital formation; foreign direct investment; openness to trade; demographic conditions; and weather conditions are identified from literatures as determinants of growth and descriptive discussion is broadly presented.

2.3.1. Economic Policies and Macroeconomic Conditions

As can be extensively discussed in section 1.4.1, macroeconomic stability and sound economic policies are one of the most significant factors of growth. Current account balance, rate of inflation, amount of external debt and level of budget deficit are among those indicators of macroeconomic conditions of an economy. Table 2.9 presents time series data on macroeconomic indicators in Ethiopia.

While the economy registered an average growth of 10.9% between 2004 and 2013, the average inflation rate was more than 17%. Kremer et al, (2012) estimated that inflation rate that exceeds 17% is associated with low economic growth in non-industrialized countries. Similarly, Gylfason (1999) concludes that high inflation tends to be associated with slow growth. In this regard, the country exhibits a high inflationary crises especially in recent times and it was more than 17%, 44%, 33% and 22% in 2007, 2008, 2011 and 2012 respectively. High economic growth was observed in line with high inflation in the country. While, high growth induced inflation in the country when aggregate demand rises, high inflation may in turn decelerate economic growth. Such high level of increase in the general price of goods and services reduces real income, capital formation and productivity growth and thus decelerate economic growth. Increasing supply will contribute to contain the booming inflation rates.

A number of literatures evidenced that current account deficit and growth exhibit opposite correlation in least developed countries. On average, Ethiopia’s current account deficit was 6.65% of GDP between 2004 and 2013 and it reached 7.1% in 2014. This seems relatively high when compared with the 1990s average of 1.07%. According to Turgut (2007), a current account deficit of more than 4% of GNP discloses a country’s probable financial instability and crises if it is financed by foreign capital. In this regard, the country’s external debt reached more than 21% of GDP in 2013.

According to Wolde-Rufael (2008), fiscal balance is one of the essential policy tools for long run macroeconomic stability in Ethiopia. Government budget deficit, however, showed an average of 2.58% of GDP during 2004-2013. As of Turgut (2007), a budget deficit of 3% of GNP is assumed to be the threshold rate for financial instability in an economy. Moreover, the country’s external debt accounted for an average of almost 30% of GDP between those years. A study by Clements et al (2003) revealed that reduction in external debt would result in increasing per capita growth in low income countries. The development plan that Ethiopia follows in improving infrastructure coincides with high spending and external debt that amounted to more than 17% and 25% of GDP in 2014 respectively. This created both fiscal and debt imbalance and thus macroeconomic instability.

Table 2.9 Macroeconomic Indicators

Year	GDP growth rate	Inflation (CPI)	Current Account Balance (as % of GDP)	Budget Deficit (as % of GDP)	External Debt (as % of GDP)
2004[1]	11.73	3.26	-6.7	-3	79.9
2005	12.64	12.94	-12.87	-4.5	54.0
2006	11.54	12.31	-11.9	-4.7	43.6
2007	11.8	17.29	-4.28	-3.7	12.9
2008	11.19	44.4	-6.85	-2.9	11.2
2009	10.04	8.47	-6.88	-0.9	11.1
2010	10.57	8.14	-1.45	-1.3	18.7
2011	11.39	33.22	-2.5	-1.6	24.4
2012	8.84	22.77	-7	-1.2	20.4
2013	9.66	8.08	-6.05	-2	21.4

Source: Own compilation based on IMF (2014); World Bank (2015a) and NBE (2014)

1. Ethiopian fiscal year is applied for the first three column

Generally, the macroeconomic environment in Ethiopia can be characterized by galloping but indeterminate inflationary condition, relatively high deficit in current account balance, development driven budget deficit and high and increasing external debt. The macroeconomic stability that would be attained by the rising economic growth and per capita income has being deterred by increasing inflation and fiscal imbalances and external debt crises.

2.3.2. Domestic Investment

As is well thought-out in a number of studies and growth models and briefly assessed in section 1.4.2, gross capital formation is one of the most important determining factors of economic growth.

The performance of investment and saving in Ethiopia is depicted in Figure 2.2. In 1990s, gross capital formation averaged almost 19% of GDP. This has increased to almost 32% between 2004 and 2013. However, domestic saving only slightly increased from 12% of GDP in 1990s to 13.48% between the same years. Investment-saving gap, thus, increased from almost 7% in 1990s to more than 18% between the same years. Similarly, the growth of investment amounted for 2.65% between 2004 and 2013. In contrast, investment was decelerated by more than 3% on average in 1990s. The low level and slow growth of investment in 1990s attributed to limited private participation in the early 1990s as the country was just transiting to liberalized economy. Moreover, the country waged a war with Eritrea at the end of the period and thus government consumption towards the war was monumental. However, since 2000, public expenditure on investment has been rising. Government spending on development of infrastructure, education, health facilities, energy and agriculture significantly increases. This had immense contribution to the growth during the period under consideration. The emphasis on the side of government towards state centered development since 2005 has substantially exalted the role of public investment together with the participation of private sector.

As can be indicated in Table 2.10, approved private investment amounted to more than 955 billion Birr during the ten years since 2003/04. Similarly, public investment accounted for approved capital of more than 289 billion Birr during the same years. Total investment has increased to more than 1.2 trillion Birr during the same period from a sum of 91.6 billion Birr between 1992/93 to 2002/03. Public expenditure on mega projects like road and hydroelectric power contributes a lot in boosting public investment in the country.

Generally, the growing private sector participation and the state centered development efforts boost investment in the country. This is substantial in contributing to capital formation and hence, stimulating the growth observed in the last decade in the country.

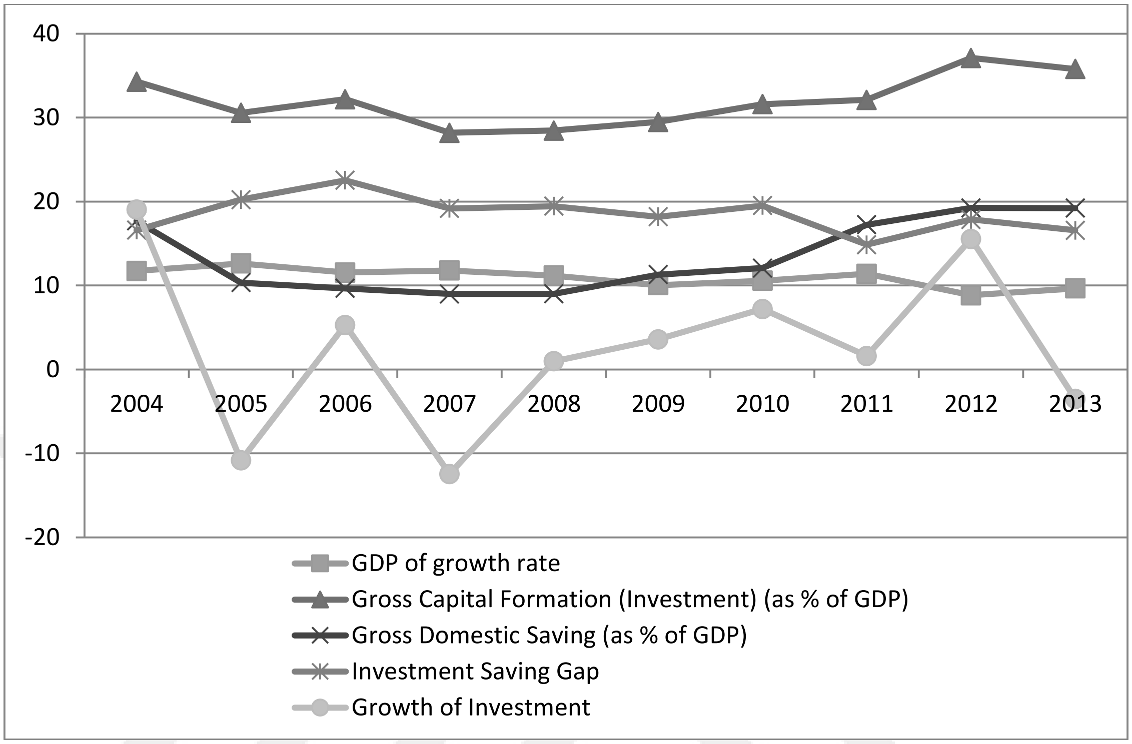

Figure 2.2 Investment and Saving in Ethiopia
Source: Own Compilation based on World Bank (2015a) and IMF Database (2014)

Table 2.10 Private and Public Approved Investment, in millions of $Birr^1$

Year	Private Investment	Public Investment	Total
2003/04	19382.7	1837.04	21219.74
2004/05	34976.7	1486.48	36463.18
2005/06	61821.1	18215.08	80036.18
2006/07	93579.1	0	93579.1
2007/08	170117.2	261.56	170378.8
2008/09	156741.2	82783.52	239524.7
2019/10	96021.2	393.89	96415.09
2010/11	95448	154019	249467
2011/12	143291	2877	146168
2012/13	84308	27763	112071
Total	955686.2	289636.57	1245322.77

Source: Own compilation based on National Bank of Ethiopia (NBE, 2014)
Date in Ethiopian fiscal year
1. 1 USD = 20.454 Birr as of April 8, 2015

2.3.3. Human Capital Formation

Endogenous growth models incorporated human capital formation as an important factor of growth. Likewise, as can be elaborated in section 1.4.3, numerous studies documented the role of education, health and research and development in growth process.

According to UNESCO database, the country's literacy rate was 27% in 1994 and it has significantly increased to 39% in 2012 and projected to reach 49% in 2015. Similarly the average year of schooling has risen from 1.1 year in 1990 to 2.2 year in 2010 and 2.6 year in 2015. According to the same source, gross enrolment ratio in primary education also significantly increased to more than 95% in 2012/2013 fiscal year from less than 49% in 1999. Similarly, secondary education enrolment ratio grew by more than 80% from its level in 1999 to reach 24.4% in 2012/13.

Table 2.11 Education in Ethiopia

Year	Average Year of Schooling	Educational Expenditure (as % of GDP)
2000	1.5	4.05741
2006	1.6	5.59339
2007	2	5.55284
2008	2.2	5.50911
2009	2.3	4.61708
2010	2.2	4.73791

Source: Own Compilation based on World Bank (2015a) and UNESCO (2016)

The fast and prominent achievement in the educational sector is best described by the growing public expenditure for education infrastructure. The share of education expenditure from GDP has nearly doubled itself in ten years to reach 4.74% in 2010. Likewise, its share from the total government expenditure has favorably increased from 14.12% in 2000 to 24.35% in 2010. The growing emphasis for education in recent years has constructive role in helping the process of human capital accumulation and hence economic growth in the country. The fast economic growth in the past decade can, therefore, convincingly and trustworthily be partly elucidated by the growing educational attainment and the consequential human capital formation.

Likewise, the health condition of the population could be improved during the period under discussion. According to World Bank (2015a), life expectancy of the Ethiopian population was 56 years in 2004. This has significantly increased to 64 years in 2013. Within ten years, crude death rate has also dropped from 11.5 persons per 1000 people in 2004 to 7.6 in 2013. Similarly, the percentage of population who could access to improved water and sanitation facilities has enhanced to 53.5% and 26.6% in 2013 from 36.4% and 24% in 2004 respectively. Moreover, total health expenditure has increased from 4.3% of GDP in 2004 to 5.1% in 2013. This is relatively high compared to figures in 1990s as it, for example, was only 3% of GDP in 1995. Though it is still below than expected levels that the country urges to attain for the development of the health sector, these all are good indicators of the improvement in the health condition of the people. Development in the prevention of diseases and early deaths and the resulting betterment of the health of the working force in turn have positive role in enhancing labor productivity and human capital formation.

The country, however, performs very low in research and development. According to UNESCO (2015), gross domestic expenditure that went to research and development was only 0.61% of GDP in 2013, of which government shares merely 24.5%. Likewise, World Bank (2015a) reveals that high technology export shares only 2.4% of total manufactured good exports in 2013. In addition, ICT goods comprises of only 0.1% of total goods exported in 2013. Moreover, there were only 42 researchers per one million people in the country in 2013. Though slight emphasis has been given only very recently, the development of the sector needs utmost attention for its significance in assisting human capital formation in the country is momentous.

2.3.4. Foreign Direct Investment

As one of the most substantial determinant of growth, foreign direct investment (FDI) is contained in endogenous growth models. Furthermore, a number of empirical studies, as could be summarized in section 1.4.4, assert the premises that foreign direct investment has constructive role in the process of economic growth.

Table 2.12 compiles data on the performance of foreign direct investment in Ethiopia. FDI amounted to a total of 4.0539 billion USD between 2004 and 2013. This is substantially higher than that of twelve years' cumulative amount of 1.88 billion USD during 1992-2003. The ratio of FDI to GDP accounted for an average percentage of 1.89% during 2004-2013. Furthermore, FDI grew by nearly 40% between the same years on average. A substantial growth was noticed in 2006, 2009, 2011 and 2013 which accounted for more than 100%. The negative growth rate in 2005 marked for internal political unrest following the 2005 national election. Likewise, the growth of FDI was also decelerated in 2007 and 2008 attributed to the international financial crises that hit the world in 2008.

Table 2.12 Foreign Direct Investment in Ethiopia

Year	Foreign Direct Investment (amount) (in millions USD)	Foreign Direct Investment (as % of GDP)	Foreign Direct Investment (Growth rate)
2004	545.1	5.38	17.23
2005	265.1	2.14	-51.37
2006	545.3	3.57	105.7
2007	222	1.13	-59.29
2008	108.5	0.4	-51.13
2009	221.5	0.68	104.15
2010	288.3	0.96	30.16
2011	626.5	1.96	117.30
2012	278.6	0.64	-55.53
2013	953	2	242.07

Source: Own Compilation based on World Bank (2015a)

Generally, the market oriented economic strategy in post military rule in the country not only promoted the participation of domestic investment but also of foreign direct investment. Moreover, various regulatory and fiscal incentives attracted foreign investment to, and ease its involvement in, the country. Thus, the economic growth registered during the last decade can partly be explained by the growing capital inflow through foreign direct investment.

2.3.5. Openness to Trade

Openness to trade is incorporated in several growth models as one of important determining factors of growth. Likewise, several empirical studies documented the positive and significant relation between openness and growth, as is tried to be reviewed in section 1.4.5.

Figure 2.3 clearly discloses the relationship between growth and openness. Between 2004 and 2013, export grew by an average rate of 18.32% while import registered an annual average growth rate of 20.25%. This is substantial when is compared with average annual growth rates of 6.97% and 8.48% during 1991-2003 for export and import respectively. Export registered a high growth rates in 2004 and 2011. The year 2004 marked for a good rain season in which a rise in agricultural production was the cause for the high growth in export. In 2011, the growth rate of export reached almost 31% while imports grew only by 1.69%. This is attributed to the 10% currency devaluation in September 2010. Similarly, the ratio of trade to GDP also significantly increased from 23% in 1990s to 45.42% between 2004 and 2013. This all disclose the country’s growing openness to international trade.

Policies and incentives promoting export; the slight development in diversification of export items; the growing private sector participation; tariff and import tax incentives; the booming public spending on development infrastructures; and the 2010 currency devaluation elucidate the growing participation of the country in international trade arena between those years. Generally, the increasing trade openness of the country was consistent with the fast growth performance attained in the last consecutive years.

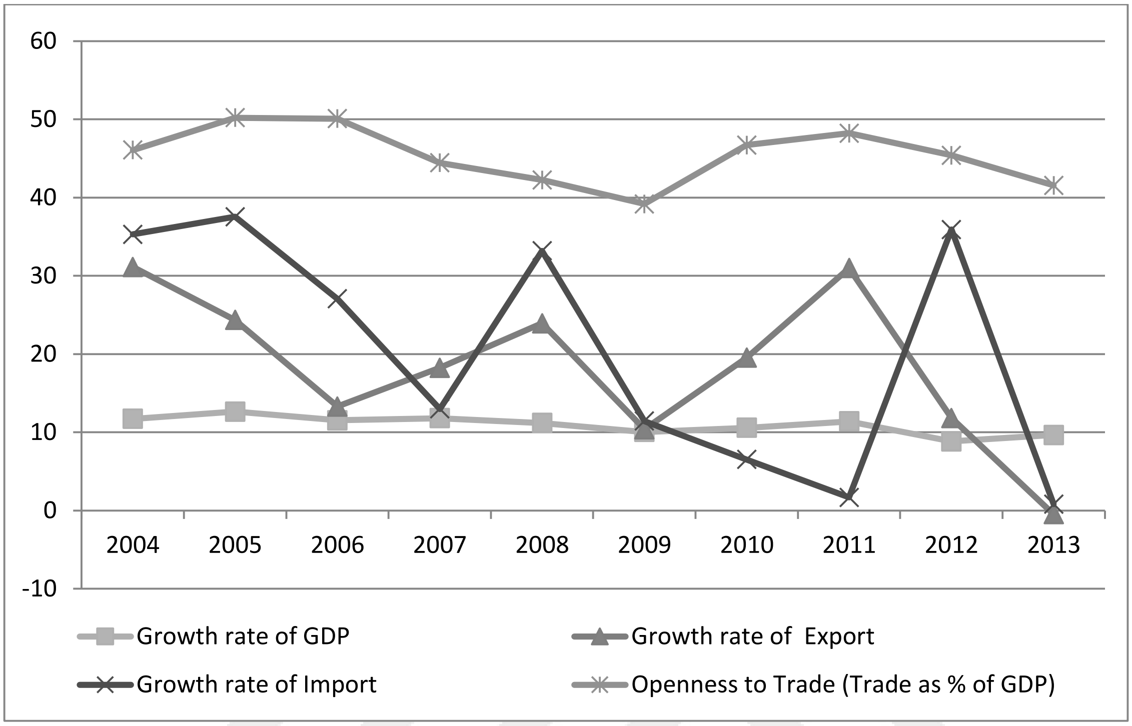

Figure 2.3 Trade Openness and growth in Ethiopia
Source: Own Compilation based on World Bank (2015a) and IMF (2014)

2.3.6. Demographic Conditions

Several theoretical and empirical literatures documented the role demographic conditions played to economic growth of a country. As is also well reviewed in section 1.4.6, a number of empirical findings affirm the presence of relation between economic growth and demographic indicators like population growth, age composition, dependency ratio and migration.

Table 2.13 presents the population dynamics in Ethiopia. Total population reached 94.1 million in 2013 from 74.04 in 2004 and 43.43 million in 1990. The high fertility and decreasing mortality rates are the main causes for such explosion in population. The average annual growth rate of population, however, was slightly reduced from 3.23% in 1990s to 2.69% between 2004 and 2013. In addition, the rate of urbanization averaged 4.61% during the same period. This makes the country to exhibit one of the fastest urbanization in Africa. The population of the country is large and its growth is still high.

This, as of several empirical findings, has its own contribution in fostering growth or decelerating it.

The working-age population constituted for more than half of the total population during 2004-2013. The presence of large number of working class, with its favorable motivation and attitude of the young generation, is considered as a huge potential in fostering economic growth. Moreover, the population density almost doubled itself to reached 94 people in 2013 from 43 people in 1990. This is expected to help specialization in economic activities and knowledge diffusion and hence economic integration and growth. However, the dependency ratio remained as high as 85.5%, to mean that almost half of the population is dependent on the other half. This set back the possible advantages obtained from large and growing young population and rapid population growth.

Table 2.13 Demographic Condition in Ethiopia

Year	Population (in millions)	Population growth rate	Working age group (ages 15-64) (% of total population)	Dependency ratio	Population Density (people per square kilometer area)	Urbanization (annual urban population growth rate)
2004	74.07	2.876555	50.53378	97.88743	74.06615	4.1
2005	76.17	2.797288	50.68475	97.29799	76.16724	4.0
2006	78.29	2.749672	50.88876	96.50707	78.29065	4.0
2007	80.44	2.70922	51.1427	95.53133	80.44071	4.1
2008	82.62	2.674582	51.4532	94.35139	82.62119	5.1
2009	84.84	2.647775	51.82726	92.94865	84.83803	5.0
2010	87.1	2.625877	52.2661	91.32861	87.09528	5.0
2011	89.39	2.604038	52.76829	89.50774	89.39306	5.0
2012	91.73	2.579385	53.32263	87.53764	91.72885	4.9
2013	94.1	2.552915	53.89717	85.53849	94.10076	-

Source: Own compilation based on World Bank (2015a)

Generally, Ethiopian demography can be characterized by large population with rapid growth rate; fast rate of urbanization; low but increasing population density; large number of working-age population; and high dependency ratio. Thus, the rapid economic growth performance since 2004 could partly be explained by the demographic condition especially of population growth, age distribution and population density.

2.3.7. Weather Conditions

Ethiopian economy is said to be agrarian that supports more than 80% of the population; constitute more than 80% of exports and comprise of more than 45% of GDP. Agricultural production is of mainly subsistence and rain fed that heavily depends on the weather condition. As is briefly discussed in section 1.4.7, several empirical studies documented the significance of good weather condition for economic growth especially in least developed countries.

As can be clearly depicted in Table 2.14, Ethiopia has faced with eight national droughts since 1980. The 1983/84 drought was series in its type and consequence on consumption and welfare persists for long time. Following Vargan (2010), Araya (2011) states that those affected in the 1980/84 famine were still experiencing lower growth of consumption compared to those who were not affected. As can be shown in figure 2.4, the national drought in 1983-84 significantly depressed agricultural production in subsequent years. The growth of agriculture GDP was decelerated by 12.39% and 20.53% in 1984 and 1985 respectively. This was significantly associated with the deceleration of GDP growth that amounted to 2.85% and 11.14% in respective years. Similarly, 1989 marked for bad weather condition in the country. The drought occurred during 1997 and 2003 were also highly associated with decelerated agriculture GDP growth that accounted to 9.46% and 10.49% in 1998 and 2003 respectively. Following this, GDP growth was slowed by 3.46% and 2.16% in respective years.

Table 2.14 Drought Seasons in Ethiopia (between 1980 and 2008)

Year	Affected (number of people)
1980	7,000,000
1983	7,750,000
1989	6,500,000
1997	986,200
1999	4,900,000
2003	12,600,000
2005	2,600,000
2008	6,400,000

Source: Ethiopia- Disaster statistics (2008) as cited in Araya (2011)

On the other hand, the good rainy seasons and good harvest during 1996, 2001 and 2004 expounds the increase in agricultural production by 16.97%, 9.62 and 16.94% respectively. This certainly elucidates the years of high growth in GDP associated with high growth in agricultural GDP. As can be shown in Figure 2.3, the growth in agriculture GDP and total GDP were both high and moves parallel in post-2004 period. It can, thus, be inferred that agricultural production and hence its growth in Ethiopia is highly dependent on the rainfall and this explains the growth miracle in the last decade.

The dependency on the rain-fed agriculture doesn't only reduce current production but it also has multiplier effect on production in subsequent years. (Geda, 2001 as cited in Balcha, 2011) The drought consequently decreases current as well as future consumption and welfare. It decelerates growth in subsequent years and hardens the recovery. According to Araya (2011), the country was ranked 5th in the world as a drought prone nation and the growth efforts in any period can, thus, be retarded by weather disasters.

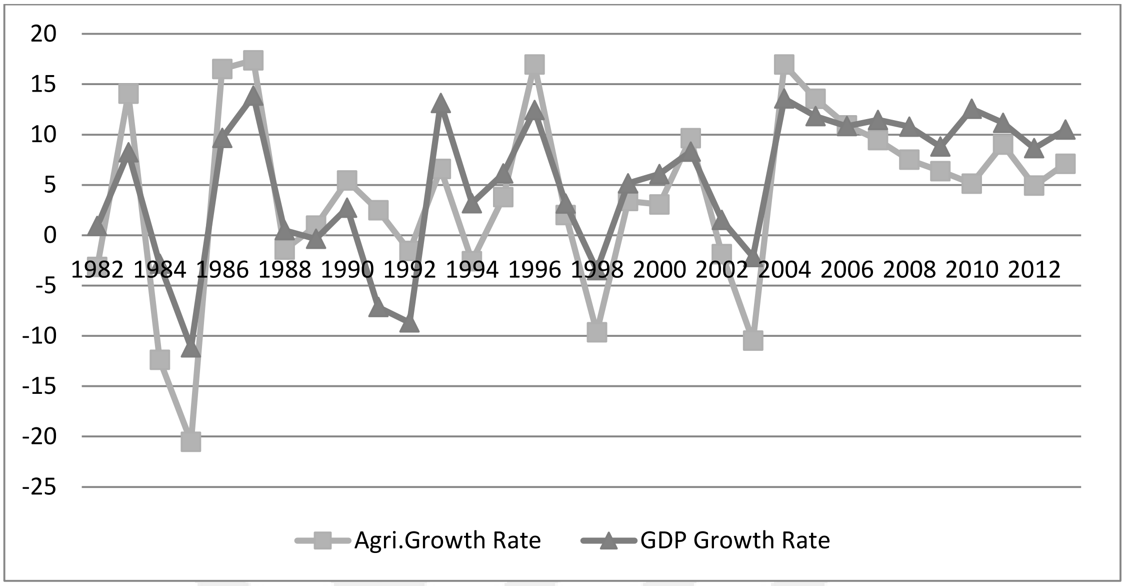

Figure 2.4 Growth of Agriculture
Source: Own computation based on World Bank (2015a)

CHAPTER THREE

DETERMINANTS OF ECONOMIC GROWTH IN ETHIOPIA: ECONOMETRIC ANALYSIS

3.1. Data Sources and Definitions

For the purpose of econometric analysis, the study employed time series data from the World Bank (WB), United Nations Conference for Trade and Development (UNCTAD), Ministry of Finance and Development (MoFED), National Bank of Ethiopia (NBE), The Freedom House and Center for Systematic Peace (Polity IV Project). The study contemplates the time period between 1980 and 2014, considering the availability of data and the need of large sample size.

Following a detailed review of theoretical as well as empirical literatures, as discussed in chapters one and two, different variables are identified that determine economic growth in the country. In various empirical and theoretical studies, a number of determinants have been incorporated in growth modeling. These include gross capital formation, human capital, research and development, exports, trade openness, government expenditure, consumption expenditure, population growth, literacy rates, foreign direct investment, fiscal balance, current account balance, foreign aid, external debt, inflation, interest rates, discount rates, level of rainfall, agricultural exports and the like. Studies incorporate one variable and exclude the other considering its appropriateness for the country under study and data availability.

In this study, seven variables are identified and amalgamated in the model as growth determinants. These are investment (gross capital formation as proxy); human capital (expenditures on education and health as proxy), trade openness; foreign direct investment; inflation; freedom (Freedom House Index as proxy); and democracy (Polity IV polity score as proxy).

1. Gross Domestic Product (RGDP)

Gross Domestic Product is the value of goods and services produced within the boundary of a country. When adjusted to price changes, it takes its real value. The study employed the value of real GDP of the country for the econometrics analysis and thus, real GDP is included as dependent variable in the growth model.

2. Human Capital Formation (EHE)

The study tried to capture the growth role of education, health and research and development. Though difficult to take a single common variable that explains human capital formation, the study uses total real value of Expenditure on Health and Education (EHE) from among many proxies. It is expected to have positive effect and thus takes positive sign.

3. Gross Capital Formation (GCF)

The effect on growth of the enhancement in physical capital or investment can be examined by using data on Gross Capital Formation. Considering availability of data, real value of Gross Domestic Investment is incorporated as a proxy for GCF. It is expected to have constructive role to growth and thus assumed to take positive sign.

4. Trade Openness (OPP)

Trade openness is expressed as the ratio of total trade to GDP. It shows how much a country is open to international trade and how far it goes in the involvement in the world trade arena. The values of exports and imports of goods and services as a ratio of real GDP is, thus, included as one of important growth determinants. Supported by the theory, it has assumed to take positive sign.

5. Foreign Direct Investment (FDI)

The flow of foreign capital to an economy has unequivocal effect on economic growth, assuming other factors unchanged. FDI plays paramount role not only in boosting physical investment but also enhancing technology transfer and knowledge diffusion. Time series data on the real value of foreign direct investment is incorporated and the variable has assumed to possess positive sign.

6. Inflation (INF)

Inflation, the general increase in price of goods and services, is one of the most important indicators of macroeconomic condition. Stable economy is characterized by low rate of inflation and of a steady one. Hence, to capture the effect of inflation on growth, consumer price index is included as independent variable in the model and it has assumed to take negative sign.

7. Freedom (FREE) and Democracy (DEM)

It is in the interest of the researcher and on the very logic of contemporary situation to capture the impact of presence or absence of political and civil rights as well as democracy on economic growth of Ethiopia. In the very right time of argument among various elites on the paradoxical conditions of freedom (and democracy) and economic growth in Ethiopia presently, it is quiet necessary to observe what the data will tell. In the study, “Freedom in the World” index (Freedom House Index) is employed as proxy for freedom and “Polity IV Score” is considered to explain the level of democracy in the country.

According to Freedom House, Freedom House Index captures country’s performance in terms of civil and political rights. It analyzed political participation, freedom of expression, belief and association, process of election, rule of law and government functioning and individual rights. The index is the average of indices of civil liberties and level of political rights and it range from 1 (best) to 7 (worst). Based on this, countries are categorized as "free" (with index value 1 to 2.5); partly free (3-5.5) and "not free" (5.5-7). In this study, freedom (FREE) variable is assumed to take positive sign.

As of Center for Systematic Peace, Polity IV score examines the quality of authority in governing institutions and accordingly, identifies democratic and autocratic nature of regimes. It has six components that investigate regimes' "qualities of executive recruitment, constraints on executive authority and political competition". The score envisions regimes' authority that range from fully institutionalized autocracies through mixed autocracies (anocracies) to fully institutionalized democracies. The score has 21 scale ranging from -10 (hereditary monarchy) to +10 (consolidate democracy), from which the score from -10 to -6 is for autocracies, from -5 to 5 is to those anocracies and from 6 to 10 is for democratic regimes.

3.2.Methodology and Model Specification

In the econometric model that examines the relationship between economic growth and its determinants, the study employs Johansen's multivariate cointegration analysis and for multivariate and bivariate causality analysis it uses Error Correction Model (ECM). Eviews6 statistical software packages were used in analyzing the data.

3.2.1. Model Specification

The conventional neoclassical growth model, as briefed in chapter one, is expressed in equation (3.1).

$$y = f(k, l) \tag{3.1}$$

Where, y, k and l represent level of output, physical capital and human capital respectively.

The functional form of exact relationship between the dependent and independent variables in the general form is expressed in equation (3.2).

$$y_t = f(x_{it}) \tag{3.2}$$

In this equation, y_t is the level of output at time t and x_{it} represent the independent variables functional to y_t at time t. i = 1, 2, 3… n, where n is the number of independent variables included in the model.

In its linear form, the equation can be expressed as in equation (3.3).

$$y_t = \beta_0 + \beta_i x_{it} \tag{3.3}$$

Where, β_0 and β_i are unknown parameters of the model.

The economic model in equation (3.3) shows an exact or deterministic relation between dependent and independent variables. Most interesting, however, is the inclusion of an error term that allows capturing other variables that is related with the dependent variable but cannot be included in the model. Equation (3.4) provides such an inexact functional relation between the variables.

$$y_t = \alpha_0 + \beta_i x_{it} + \varepsilon \tag{3.4}$$

Where, ε is an error term (disturbance term), which is a random variable that captures those factors that are not explicitly included in the model. The error term is identically and independently distributed with zero mean and constant variance.

Following these general specification of the functional and linear form of growth equations, the economic growth function of Ethiopia is expressed mathematically as equation (3.5).

$$y_t = f(EHE_t, GCF_t, OPP_t, FDI_t, INF_t, FREE_t, DEM_t) \tag{3.5}$$

The value of the variables are fixed for a given time t. According to Verbeek (2004), logarithmic form of the variables is most appropriate and easy for estimation and interpretation as it allows elasticity measures to be directly estimated. In addition, it is helpful to escape from the problem of hetroscedasticity that arouse due to substantial difference in observational units. Thus, except for indices of freedom and democracy, all level variables are transformed to logarithmic form. The mathematical expression is presented in equation (3.6).

$$LRGDP_t = \beta_0 + \beta_1 LEHE_t + \beta_2 LGCF_t + \beta_3 LOPP_t + \beta_4 LFDI_t + \beta_5 LINF_t + \beta_6 FREE_t + \beta_7 DEM_t + \varepsilon \quad (3.6)$$

Where, the notation L refers to logarithm; ε is the error term, which is assumed to be identically and independently distributed with zero mean and constant variance. $\beta_0, \beta_1, \ldots, \beta_{11}$ are coefficient parameters, interpreted as the relative change in real GDP due to a relative change in respective determinants, except for indices of freedom and democracy.

3.2.2. Unit Root Test

Unit root test is the first step in any time series analysis and it is conducted to determine whether the data is stationary or not. A stationary (non-stochastic) process retains constant mean, variance and covariance through time, which is important for consistence estimation. In addition, in estimating models like equation (3.6), considerable attention is made regarding the existence of spurious regression that allows the regression of non-stationary time series and unrelated variables to yield statistically significant relations and thus misleading estimation and test statistics. (Gujarati, 2004, Verbeek, 2004)

Testing for existence of unit root can be conducted using Dickey-Fuller (DF), Augmented Duckey-Fuller (ADF), Phillips-Perron (PP), Ng-Perron (NP) and/or Kwiatkowski-Phillips-Schmidt-Shin (KPSS) tests. (Verbeek, 2004; Gugarati, 2004; Cryer and Chan, 2008) This study employs the first two, i.e., the Augmented Duckey-Fuller (ADF) (Dickey and Fuller, 1979) and Phillips-Perron (PP) (Phillips and Perron, 1988) tests.

Consider an AR(1) process as expressed in equation (3.7).

$$\Delta y_t = \delta + \boldsymbol{\rho y_{t-1}} + \varepsilon_{\boldsymbol{t}} \quad (3.7)$$

Where Δy_t is first difference of $EHE_t, GCF_t, OPP_t, FDI_t, INF_t, FREE_t, DEM_t$ and $\varepsilon_{\boldsymbol{t}}$ is the random error term. DF test, as developed by Dickey and Fuller (1979), can be conducted by testing the hypothesis that $\boldsymbol{\rho}$ = 0. If $\boldsymbol{\rho}$≥0, y_t is said to be a non-stationary series and thus its variance varies with time. y_t is stationary if |$\boldsymbol{\rho}$|$<$ 0. The conventional test statistics is the standard t-statistics given by equation (3.8).

$$DF = \frac{\hat{\rho}-1}{se(\hat{\rho})} \tag{3.8}$$

Where, $se(\hat{\rho})$ stands for the conventional standard error of the estimator, $\hat{\rho}$.

For a case of an autoregressive process of higher orders, the Augmented DF (ADF) test is devised. Consider an AR(p) given in equation (3.9).

$$\Delta y_t = \delta + \boldsymbol{\rho y_{t-1}} + \boldsymbol{\theta_1 y_{t-1}} + \cdots + \boldsymbol{\theta_{p-1} y_{t-p+1}} + \varepsilon_{\boldsymbol{t}} \tag{3.9}$$

Where $\boldsymbol{\rho}$ is the order of autoregressive process AR(p) and θ_1, …,θ_1 are constants. p is selected based on the minimum Akaike Information Criterion value, as given by equation (3.15) or Schwartz Information Criteria. The test statistics is similar as in equation (3.8) and the null hypothesis that $\boldsymbol{\rho}$ = 0 is rejected when $\boldsymbol{\rho}$ is found positive in absolute value and statistically significant. These tests can be conducted by incorporating in to the test regression a constant term only or a trend and a constant term or neither of them.

While the DF test assumes that the error terms are identically and independently distributed, ADF test controls possible serial correlation in the error terms by adding the lagged difference terms of y_t. Thus, while normality is stressed in DF test, problem of autocorrelation is taken in to consideratıon in ADF test.

Another alternative approach is the PP test which is a non-augmented Dickey-Fuller test devised by Phillips and Perron (1988). It uses “non-parametric statistical method” to control possible serial correlation of the error terms without including the lagged difference terms of y_t. (Gujarati, 2004) Considering the regression in equation (3.7), the PP test statistics is given in equation (3.10) (Kogid et al, 2010)

$$PP = t_\delta\left(\frac{\gamma_0}{f_0}\right) - \frac{N(f_0-\gamma_0)(se(\hat{\rho}))}{2f_0{}^{1/2}s};\ \gamma_0 = \frac{(N-k)s^2}{N} \tag{3.10}$$

Where, t_δ is the t-ratio of δ, s is standard error of the test regression, γ_0 stands for consistence estimate of the error variance, k is the number of regressors, N is the number of observations, and f_0 is the estimator of the residual at zero frequency.

3.2.3. Co-integration Test

Two economic series, y_t and x_t, are said to be co-integrated and share a common linear stochastic trend if they can be transformed to a stationary series, say to equation (3.11), even though they are not stationary. (Verbeek, 2004) Thus, co-integration implies that the transformed series possess a stationary and finite variance although the series are not stationary and have infinite variance. (Eagel and Granger, 1987) Testing for stationarity of the disturbance of the regression of y_t on x_t, can equally mean testing for the presence of cointegration between the variables. The presence of co-integration between two series, in turn, verifies the existence of long run equilibrium relation between them, in which economic theory most often is expresses as. (Verbeek, 2004; Gujirati, 2004)

$$\varepsilon_t = y_t - \alpha_0 - \beta x_t \tag{3.11}$$

There are two important tools for verification of presence of cointegration between two series. The first one is the Engel-Granger (EG) or Augmented Engel-Granger (AEG) methodology. It is a DF and ADF unit root test on the residual obtained from regression of say y_t on x_t (as in equation (3.11)). If the residual founds stationary, then the regression of equation (3.11) is said to be cointegrating regression. The second one is Conintegrating Regression Dublin-Watson (CRDW) Test. In this test, the Dublin-Watson (d) obtained from cointegrating regression of equation (3.11) is used to verify the presence of cointegration. It is based on the null hypothesis that the series are cointegrated and we test for d = (1-$\hat{\rho}$) = 0. (Gujarati, 2004)

These tools, however, have their own problems. The residual based estimation lack power in using all available information and results are sensitive to normalization of residuals. In addition, separate estimation procedure is not devised in case of multivariate cointegration. (Verbeek, 2004) An alternative and more powerful methodology, Johansen approach, is formulated by Johansen (1988) and Johansen maximum likelihood estimation procedure is employed in this study.

3.2.4. Johansen's Approach of Cointegration Analysis and Error Correction Model

The cointegration analysis based on Johansen's approach allow for testing a number of cointegrating relations. Consider a vector representation of y_t as given in equation (3.12). (Verbeek, 2004)

$$\Delta Y_t = \delta + \Gamma_1 \Delta Y_{t-1} + \cdots + \Gamma_{p-1} \Delta Y_{t-p+1} + \Pi Y_{t-1} + \varepsilon_t \tag{3.12}$$

This is a vector autoregressive (VAR) representation involving up to p lags. Π represents the long run matrix which determines the long run dynamic properties of Y_t.

If all elements in Y_t are I(1) (integrated of order one) and no cointegrating relations exist, then $\Pi = 0$ and (3.12) represent as a stationary VAR model. In case when all elements in Y_t are I(0) (stationary), Π will have full rank (number of columns in β matrix), i.e. $\Pi = 1$. In another scenario, if Π has a rank of r, in which, $r \leq k - 1$, then the elements in Π have stationary linear combinations. For such a case, the matrix Π has a reduced rank, i.e. a rank r in which it is at most equal to the number of independent linear relationships ($r \leq k - 1$). Π can be expressed as equation (3.13). (Verbeek, 2004)

$$\Pi = \gamma \beta' \tag{3.13}$$

Where, γ is a $k \times r$ and β is a $r \times k$ matrices. In this scenario, there exists r number of cointegrating relationships, i.e. linear combinations which are stationary. Substituting Equation (3.13) with Equation (3.12) produces the following. (Verbeek, 2004)

$$\Delta Y_t = \delta + \Gamma_1 \Delta Y_{t-1} + \cdots + \Gamma_{p-1} \Delta Y_{t-p+1} + \gamma \beta' Y_{t-1} + \varepsilon_t \tag{3.14}$$

Equation (3.14) is the Vector Error Correction Model (VECM). It explains the behavior of the series in the short run that is consistent with cointegration relationship in long run. The Johansen approach, hence, is the maximum likelihood estimation of the system in equation (3.14) based on the restriction imposed as equation (3.13). (Verbeek, 2004) The estimates of Γ represent the short run relationship while estimates of $\gamma\beta'$ amalgamates long run information and γ represents the speed of adjustment to equilibrium.

Four important steps are followed in Johansen approach of cointegration analysis and Error Correction Model estimation before moving to the process of estimation. The first one is testing for the order of integration and hence, presences of unit root in the series. Second, it is important to determine the appropriate lag length, i.e. the order of the vector autoression (VAR), k. This is done by employing Akaike Information Criterion (AIC) or Schwartz Information Criterion (SIC). For example, the value of AIC is calculated using equation (3.15) and the lag length of a model with the smallest AIC value will be chosen. The third step involves the decision on the inclusion of an intercept or a trend term in the long run or short run or in both models. (Verbeek, 2004)

$$AIC = -2\left(\frac{l}{N}\right) + \frac{2k}{N} \tag{3.15}$$

In equation (3.15), *l* represent the log likelihood function, k is the number of parameters estimated based on N number of observations.

At the Fourth step, a test is undertaken about the number of cointegrating relationship, i.e. the rank of the long run matrix Π or the number of columns in β. There are two important tools that are used in this test. These are Trace test and Maximum Eigenvalue Test. Consider λ_j as eigenvalues of a $k \times k$ matrix, which involves a likelihood estimate of β for a given rank r of Π. For a null hypothesis that $H_0\colon r \leq r_0$ and an alternative $H_1\colon r_0 < r \leq k$, Equation (3.16) provides a test statistics for Trace Test. (Verbeek, 2004)

$$\lambda_{trace}(r_0) = -N\sum_{j=r_0+1}^{k}\log(1-\hat{\lambda}_j) \tag{3.16}$$

Alternatively, the test statistics for Maximum Eigenvalue Test is given by equation (3.17). It tests the null hypothesis of $H_0: r \leq r_0$ against the alternative $H_1: r_0 + 1$.

$$\lambda_{max}(r_0) = -N\log(1 - \hat{\lambda}_{r_0+1}) \qquad (3.17)$$

If the decision from results of the two tests is different, the result from Maximum Eigenvalue Test will be taken as it is more powerful than that of Trace Test. (Johansen and Juselius, 1990 as cited in Kogid et al, 2010)

Considering the above discussions, the long run growth equation is given by equation (3.18).

$$LRGDP_t = \alpha_0 + \sum_{i=1}^{p} \beta_0 LRGDP_{t-i} + \sum_{i=1}^{p} \beta_1 LEHE_{t-i} + \sum_{i=1}^{p} \beta_2 LGCF_{t-i} + \sum_{i=1}^{p} \beta_3 LOPP_{t-i} + \sum_{i=1}^{p} \beta_4 LFDI_{t-i} + \sum_{i=1}^{p} \beta_5 LINF_{t-i} + \sum_{i=1}^{p} \beta_6 FREE_{t-i} + \sum_{i=1}^{p} \beta_7 DEM_{t-i} + \varepsilon_t \quad (3.18)$$

In the presence of cointegration and when the series are of I(1), the short run growth estimation can be obtained from the error correction model as presented in equation (3.19).

$$\Delta LRGDP_t = \alpha_0 + \sum_{i=1}^{p} \beta_0 \Delta LRGDP_{t-i} + \sum_{i=1}^{p} \beta_1 \Delta LEHE_{t-i} + \sum_{i=1}^{p} \beta_2 \Delta LGCF_{t-i} + \sum_{i=1}^{p} \beta_3 \Delta LOPP_{t-i} + \sum_{i=1}^{p} \beta_4 \Delta LFDI_{t-i} + \sum_{i=1}^{p} \beta_5 \Delta LINF_{t-i} + \sum_{i=1}^{p} \beta_6 \Delta FREE_{t-i} + \sum_{i=1}^{p} \beta_7 \Delta DEM_{t-i} + \gamma ECT_{t-1} + \varepsilon_t \qquad (3.19)$$

Where, γ is the speed of adjustment to equilibrium and ECT_t is the error correcting term. Considering the coefficients of the short run dynamics, i.e, β's, ECT_t can be calculated as follows.

$$ECT_t = LRGDP_t - \left[\alpha_0 + \sum_{i=1}^{p} \beta_0 LRGDP_{t-i} + \sum_{i=1}^{p} \beta_1 LEHE_{t-i} + \sum_{i=1}^{p} \beta_2 LGCF_{t-i} + \sum_{i=1}^{p} \beta_3 LOPP_{t-i} + \sum_{i=1}^{p} \beta_4 LFDI_{t-i} + \sum_{i=1}^{p} \beta_5 LINF_{t-i} + \sum_{i=1}^{p} \beta_6 FREE_{t-i} + \sum_{i=1}^{p} \beta_7 DEM_{t-i}\right] \qquad (3.20)$$

3.3. Findings and Discussions

This section discusses empirical findings and results of the estimation of the growth dynamics in Ethiopia. Unit root and cointegration tests are undertaken and the growth equation specified in section 3.2 is estimated to identify the factors that affect economic growth. Moreover, post-estimation diagnosis analysis is also briefed.

3.3.1. Unit root Test (Test of Stationarity)

The first step in macroeconomic time series analysis is conducting a unit root test. Test for stationarity of the series is important to avoid the presence of spurious regression that yields misleading estimations and interpretations. The study employed Augmented Dickey Fuller (ADF) and Phillips-Perron (PP) tests and Tables 3.1 and 3.2 present the results respectively.

The ADF test statistics indicates that except for FDI (at constant and 10% significance level), all variables are found non-stationary at level. Similarly, the PP test statistics clarify that all variables are found non-stationary at level except for FDI (constant and trend). At first differenced level in the ADF test, however, all variables found stationary at 1% significance level for constant as well as constant and trend. The exception is for GDP (constant) and EHE (constant and trend), which are significant at 10% critical level. Similarly, the PP test showed that the first differences of all variables are stationary at 1% significance level independent of the assumption of constant or trend inclusions. KPSS test for FDI variable, which possesses different results in ADF and PP tests, shows that the series is stationary at level (constant and trend) and at first difference (constant and constant and trend). According to NP, however, the variable found not stationary at both levels. Because of these differences, it is decided to use the result from ADF. The order of integrations, hence, is order one (I(1)). Thus, the growth model will integrate all variables in “order one” to reach at the robust model.

Table 3.1 Augmented Dickey Fuller (ADF) Test Statistics

Variable	Level		First Differenced	
	Constant	Constant and Trend	Constant	Constant and Trend
LRGDP	2.507750(0)	-1.020169(0)	-2.214655 (2)	-5.381698(0)***
LEHE	2.658186(0)	-0.911245(0)	-3.715874(0)***	-3.260376(5)*
LGCF	1.431114(0)	-0.927531(0)	-6.458546(0)***	-7.269131(0)***
LOPP	-0.992533(0)	-1.850143(0)	-6.255142(0)***	-6.148608(0)***
LFDI	-2.927664(8)*	-2.702477(8)	-9.347452(1)***	-5.922110(2)***
LINF	1.692013(0)	-0.506139(0)	-4.436849(0)***	-4.810904(0)***
LPOP	-0.606647(0)	-1.369446(0)	-5.694557(0)***	-5.899242(0)***
FREE	-1.714012(0)	-1.283188(0)	-5.593904(0)***	-5.993103(1)***
DEM	-1.519382(0)	-1.261206(0)	-5.600980(0)***	-5.638158(0)***

Source: Own Computation using EViews Results
Numbers in brackets indicates number of lags selected based on Akaike Information Criteria (AIC) and for FREE and DEM, Schwartz Information Criteria (SIC)
*, ** and *** indicates 10%, 5% and 1% significance level of test statistics respectively.

Table 3.2 Phillips-Perron (PP) Test Statistics

Variable	Level		First Differenced	
	Constant	Constant and Trend	Constant	Constant and Trend
LRGDP	3.239428[4]	-0.829635[5]	-4.406951[2]***	-5.998238[9]***
LEHE	2.433422[1]	-0.977692[1]	-3.772804[2]***	-4.590742[3]***
LGCF	5.204653[16]	-0.391346[4]	-6.452994[1]***	-8.222891[7]***
LOPP	-1.003925[2]	-1.850143[0]	-6.235768[2]***	-6.135501[2]***
LFDI	-2.706878[5]*	-5.646385[4]***	-16.50627[5]***	-16.18615[5]***
LINF	1.637630[2]	-0.736279[3]	-4.455523[3]***	-4.768879[2]***
LPOP	-0.633330[1]	-1.369446[0]	-5.694519[1]***	-6.076239[5]***
FREE	-1.646605[2]	-1.107698[2]	-5.628657[4]***	-6.652061[12]***
DEM	-1.546160[2]	-1.307775[2]	-5.600694[2]***	-5.637954[1]***

Source: Own Computation using EViews Results
Note: Numbers in brackets indicates bandwidth structures selected based on Newey-West Bandwidth criteria;
*, ** and *** indicates 10%, 5% and 1% significance level of test statistics respectively.

3.3.2. Lag length selection

An important step in Johansen's cointegration analysis is the selection of lag length that is crucial for the modeling. Cointegration rank and test outputs are dependent on the determination of the lag length. Hence, Sequential Modified Lagrange Ratio (LR) test, Akaike Information Criteria (AIC), Schwartz Information Criteria (SIC), Final Prediction Error (FPE) and Hannen Quine are employed for the optimal lag length selection process.

Table 3.3 presents the VAR lag order selection criterion. Two of the criteria, LR and SIC, chooses lag order 1 while the other three criteria chooses lag order 2. Thus, the best fit model with maximum FPE and minimum AIC and HQ is the one with lag length 2 and it will be used in Johansen's cointegration test and error correction model.

Table 3.3 VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SIC	HQ
0	-140.7326	NA	1.14e-06	9.014098	9.376888	9.136166
1	75.49819	314.5175*	1.25e-10	-0.212011	3.053096*	0.886598
2	159.8195	81.76611	7.81e-11*	-1.443605*	4.723820	0.631546*

Source: Own Computation Using EViews
* denotes 5% significance level in lag order selection criteria

3.3.3. Cointegration Test

In order to determine the existence as well as the number of cointegrating vectors in non-stationary series, cointegrating test has conducted. This is equal to testing the stationarity of the residuals at level. In this respect, the study applies the most common and powerful tool, Johansen's cointegration test which amalgamates Maximum Eigenvalue and Trace Tests in its reporting.

Before we proceed to testing cointegration behavior of the series, important assumption on the trend behavior of the variables shall be done. Most macroeconomic data have deterministic trend and this is exhibited by the behavior of the variables incorporated in the model of the study. Moreover, these variables are observed for being stochastic in level. Thus, the cointegration test in the study assumes the presence of a linear deterministic trend in level data and intercept is included in the conitegrating equation.

The result of the multivariate cointegration test is documented in Table 3.4. According to both Trace statistics and the Maximum Eigenvalue statistics, the null hypothesis of presence of at most one cointegration relations is rejected at 5 percent significance level. Thus, there are two cointegrating equations that show cointegration among the variables.

Table 3.4 Cointegration Test based on Trace and Maximum Eigenvalue Tests

Trace Statistics, λ_{trace}				
Hypothesized No. of CE(s)	Eigenvalue	Test Statistic	0.05 Critical Value	Prob.**
None *	0.930430	240.3815	159.5297	0.0000
At most 1 *	0.836674	152.4228	125.6154	0.0004
At most 2	0.583529	92.62644	95.75366	0.0805
Max-Eigen Statistics, λ_{max}				
None*	0.930430	87.95869	52.36261	0.0000
At most 1*	0.836674	59.79633	46.23142	0.0011
At most 2	0.583529	28.90601	40.07757	0.4979

Source: Own Computation using EViews
* denotes rejection of the hypothesis at 0.05 level
** MackKInnon-Haug-Michelis (1999) p-value
CE(s) denote number of cointegration equations

The two potential cointegrating equations are represented in equations (3.21) and (3.22), from which the study chooses one to incorporate in to the short run dynamic analysis.

$$ECM_{11} = LRGDP - 0.028649 * LEHE - 0.407146 * LGCF + 0.082911 * LOPP - 0.043415 * LFDI - 0.153331 * LINF + 0.011687 * FREE + 0.037118 * DEM \quad (3.21)$$

$$ECM_{12} = LEHE - 1.007356 * LGCF - 2.724267 * LOPP + 0.109304 * LFDI - 0.564524 * LINF - 0.026834 * FREE + 0.047281 * DEM \quad (3.22)$$

The identification of a unique cointegration equation is conducted by testing weak exogeinity of the equations using VEC Granger Causality/Block Exogeneity Wald Test and VEC coefficient restrictions. The Granger causality Wald test discloses that LEHE is weakly exogenous variable while LRGDP is not. Moreover, the VEC coefficient restriction specification of normalizing ECM_{12} for LEHE and restricting its adjustment coefficient to zero was found to be binding. The LR test for binding restrictions couldn't reject the restrictions imposed on LEHE at conventional significance level while it rejects for LRGDP at 1 percent significance level. Thus, the second equation is rejected from entering the short run dynamics as it is a long run equation of a weak exogenous variable.

3.3.4. Error Correction Model -Estimation of the Short Run Dynamics

The next step in Johansen's cointegration analysis is the estimation of the short run impact of growth determinants. The cointegration test as inferred from the test statistics suggested two cointegrating equation among the variables. However, it is difficult to interpret coefficients from long run estimates when there are more than one cointegrating equations. (Maddala and Kim, 1998) The exogeneity test and VEC coefficient restriction, however, reject the second cointegrating equation and the first equation is, thus, entered in to the short run dynamics. The cointegrating series, thus, shall have an error correction representation through an error correction term (ECT) in the short run such that it enables to understand the nature of adjustment from disequilibrium. Table 3.5 compiled the results from estimation of the short run growth equation. While GCF, EHE, FDI and INF have found statistically significant, other variables have not.

The coefficient of the variable EHE from the short run estimate has appeared positive and significant at 5 percent. In short run, public expenditure on education and health has growth-enhancing impact in the country and a 10 percent rise in the expenditure increases real GDP by 2.14 percent. Theoretical literatures support the result that government spending on health and education infrastructure will enhances the living standard of the people and its educational attainment, which will in turn contributes to the stock of skilled and healthy human capital. The result is also consistence with empirical evidences by, for instance, Mekdad et al (2014) (growth-enhancing of education expenditure), Churchill et al (2015) (of education expenditure), Gisore eta al (2014) (of health expenditure), Nurudeen and Usman (2010) (of health expenditure) and Chude and Chude (2013) (of education expenditure).

Table 3.5 Estimation of Short Run Growth Equation

MODELING DLRGDP				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
ECT	-0.405601***	0.138679	-2.924746	0.0076
DLEHE(-1)	0.214492**	0.095426	2.247730	0.0345
DLGCF(-1)	-0.106595*	0.058292	-1.828644	0.0805
DLOPP(-1)	0.056229	0.063638	0.883580	0.3861
DLFDI(-1)	-0.007428*	0.003710	-2.002210	0.0572
DLINF(-1)	0.325547***	0.089889	3.621635	0.0014
DFREE(-1)	0.022183	0.023239	0.954565	0.3497
DDEM(-1)	0.009851	0.007450	1.322311	0.1991
R^2= 0.603913				
F-statistic = 3.896456 Prob(F-statistic)=0.004023				

Source: Own Computation using EViews
*, ** and *** indicates 10%, 5% and 1% significance level of test statistics respectively.

The short run impact of investment is found negative and statistically significant at 10 percent. The growth-inhibiting nature of gross investment in the short run could be due to high level of public investment in the study period. According to World Bank Development Indicator (2010), as cited in (Hailu, 2015), the amount of public investment averaged to 9.12% of GDP during the study period (1980-2013). This is almost equals to private investment that averaged to 10.8% of GDP during same period. In this regard, large amount of public investment has a “crowd out” effect on private investment and growth, and it took long gestation period before its impact is observed.

The short run impact of trade openness is observed positive thought statistically insignificant. The sign of the coefficient shows that the more the country is open to international trade, the higher will be the real GDP in the short run. Yanikkaya (2003), Andersen and Babula (2008), Easterly (2002), Tadesse (2013) and Asfaw (2015) asserts the result with regard to sign. Similarly, Gries and Redlin (2012) has disclosed the positive and significant relation between openness and growth yet negative one when the direction moves from growth to openness. However, openness has found insignificant in affecting growth in the country. This can be due to the insufficiency of trade openness to bring about economic growth without the presence of effective institutions and policies. The finding by Ulasan (2014) also confirms the argument. The minimal growth impact of the country's openness to trade can also be explained by the dominant low quality export product of the country. In this regard, the evidence by Huchet-Bourdon et al (2011) goes further to even reveals a negative long run effect of openness on trade for those countries specialized in low quality exports. Moreover, considerable part of Ethiopia's import is comprised of consumer goods, which have little impact on production and hence growth. Moreover, from Ulasan (2014) and Baliamoune-Lutz and Ndikumana (2007), it can be inferred that minimal effect of openness could also emanate from existence of low institutional quality in the country that would otherwise transform and channel openness to growth and facilitate investment and assist the effective use of trade liberalization. According to Andersen and Babula (2008), productivity growth in post trade liberalization in developing economies necessitates investment in education, enhancement in property rights and development of institutions.

The short run estimate produces negative sign for FDI and 10 percent significance in statistical terms. The growth-impeding nature of foreign direct investment in the country could be due to the low absorptive capacity of the economy that hinders to take the advantage of FDI in the short run. With regard to this, the finding of Borensztein, et al (1998) reveals that FDI is growth-enhancing only when an economy has a minimum threshold stock of human capital to absorb the incoming advanced technologies. Similar results were also found by Tadele (2013), in which he further test absorptive capacity of the Ethiopian economy to FDI and found that "the economic power of the nation is not as such strong to reap the benefits of FDI in the short run." Empirical studies with similar findings were also evidenced by, for example, Louzi and Abadi (2011), Belloumi (2014), Sethi and Sucharita (2009).

With 1 percent significance level, INF is found to be positive in the short run. Accordingly, a 10% increase in the level of inflation (consumer price index) increases the real GDP by 3.26% in the short run. The positive sign for INF may be explained by the high level of inflation since 2004 (averaged to 17.08 percent), which was accompanied with high rate of economic growth (averaged to 10.9 percent during 2004-2013). The level of inflation during the period was higher, comparative with 5.6 percent prior to 2004 and 8.94 during the whole study period. As the main engine of the growth recently, government has involved at large in the economy through infrastructural development which increases the need for financing the growing budget. According to Geda and Tafere (2008), however, the financing has been partly met by money creation that triggered inflation alongside with growth and this partially explains the growth-inflation nexus. Moreover, inflation makes capital more attractive than money and consequently leads to capital accumulation that triggers growth in transition periods when economies like contemporary Ethiopia are experiencing with. The theoretical explanation by Phillips curve has consolidates our result that inflation goes with lower unemployment and higher economic activities and hence, triggers growth. Similarly, various empirical literatures support the finding, for example, Sarel (1995) (positive impact of inflation rates not higher than 8 percent), López-Villavicencio (2011) (basing a threshold level), Pollin and Zhu (2006) (up to a threshold level of 15-18%).

The short run impacts of freedom (negatively) and democracy (positively) scores have found insignificant in affecting growth in the country. Accordingly, the economic growth for the last 35 years couldn’t significantly be related with political, civil and democratic right scores. The average score for political and civil rights (freedom index) was 5.7 during the study period. This made the country to be categorized among those countries with the lowest score and labeled as “not free” in terms of political right and civil liberties. Similarly, the democracy index averaged to -3 during the same period and it reveals the country’s undemocratic-anocratic political system over the last 35 years. Thus, Ethiopian economy for the last three decades has been performing under undemocratic political environment that suppress political as well as civil rights. What impact freedom and democracy is expected to have on growth at such conditions in the short run? Based on the finding of the study, the answer will be nothing, if not insignificant. Empirical evidences have support the finding as well. For instance, according to Barro (1994), more democracy is not a key for growth and it has only weak positive effect on growth in countries with few political rights at initial levels. The insignificance of freedom and democracy in affecting growth may be due to the economy's infancy stage in producing reasonable level of living standards after which, according to Barro (1994), will political freedom typically develop and in turn foster growth. In addition, the finding can also be supported by the argument that institutional preconditions (for example, property rights and government expropriation) have not well developed in the country and have not passed through the process of democracy and freedom in such a way that they would be growth-enhancing. This argument is also affirmed by the finding by Acemoglu et al (2001). The evidence by Baum and Lake (2003) also asserts the finding that democracy doesn't have significant direct effect on growth but only indirect one through improving life expectancy (poor countries) and increasing secondary education (rich countries). From the finding of the study, it may also be inferred that economic freedom should be given a priority above political freedom and civil liberties, as is evidenced in the works of Barro (1994) and Tavares and Wacziarg (2001).

The coefficient of the error correction tem (ECT) has estimated as -0.4, significant at 1 percent and negative as expected. This implies for the existence of a stable long run relationship among the variables and moderate speed of adjustment to equilibrium. The model converges to equilibrium in such a way that 40% of the discrepancy in the current period is adjusted to equilibrium in the next period. This means, more than one third of any deviation from the static growth equilibrium is adjusted within a year. Structural rigidity that characterized most developing countries explains the moderate adjustment process.

3.3.5. Granger Causality Analysis

Granger causality portrays the causation and prediction of a series by another series using the information available in the series including its lagged values. (Granger, 1969) As the estimation suggested a short run relationship among the variables, it is important to perform causality analysis to affirm their correlation. Accordingly, Granger causality test is performed to test the null hypothesis of no Granger Causality relationship between variables.

Table 3.6 Granger Causality Test Statistics

DEPENDENT VARIABLE= DLRGDP		
Null Hypothesis	Wald Statistics	Probability
D(ALL)⇏ DLRGDP	30.22604***	0.0001
DLEHE⇏DLRGDP	5.052292**	0.0246
DLGCF⇏DLRGDP	3.343938*	0.0675
DLOPP⇏DLRGDP	0.780714	0.3769
DLFDI⇏DLRGDP	4.008843**	0.0453
DLINF⇏DLRGDP	13.11624***	0.0003
DFREE⇏DLRGDP	0.911194	0.3398
DLDEM⇏DLRGDP	1.748506	0.3398
DLRGDP⇏DLGCF	7.336249***	0.0068
DLRGDP⇏DLFDI	37.42466***	0.0000

Source: Own Computation using EViews
*, ** and *** indicates 10%, 5% and 1% significance level of test statistics respectively.

Quite interesting result is observed from Granger causality test shown in Table 3.6. All variables are found Granger caused to real GDP jointly at 1 percent significance level in the short run. In addition, there is causal relationship running from GCF to RGDP, from EHE to RGDP, from FDI to RGDP as well as from INF to RGDP. Moreover, the causation between RGDP and GCF as well as RGDP and FDI is bidirectional as RGDP also Granger caused GCF and FDI independently. Although gross investment, foreign direct investment, health and education expenditure as well as inflation are the most important factors to cause growth, determinants of growth as a whole are found important to jointly cause economic growth in the country.

3.3.6. Post-Estimation Diagnosis Analysis

Table 3.7 presents various diagnosis tests on the estimated model. This is important to be guaranteed about the residuals from the estimated model in which the assumptions of normality, homoscedasticity and free from serial correlation are fulfilled.

Residual Vector Normality Test: Jarque-Bera test is the conventional test employed to check the normality of the residuals. As clearly shown in Table 3.7, the null hypothesis that the standardized residuals are normally distributed can't be rejected as the probability of the test statistics is greater than 5 percent. Thus, the residuals are found normally distributed.

Residual Vector Serial Correlation LM Test: The diagnosis test for autocorrelation, that produced large p-values for the statistics, reveals that the null hypothesis of no-serial correlation cannot be rejected at any critical value. Hence, there is no evidence of problem of serial correlation among residuals.

Residual Vector Hetroskedasticity Test: The result from Breusch-Pagan-Godfrey as well as ARCH tests of Heteroskedasticity reveals that the assumption of no-hetroskedasticity cannot be rejected at any conventional critical values. Thus, it can be inferred that the problem of hetroskedasticity is not evidenced from the model and the residuals are found to be homoscedastic. Generally, from the diagnosis tests, we can conclude that the estimated model is trustworthy and produced valid, robust and unbiased results.

Table 3.7 Post-Estimation Diagnosis Tests

TEST	Statistics	Probability
Residual Vector Normality Test (Jarque-Bera)	4.509521	0.104899
Residual Vector Serial Correlation LM Test (Breusch-Godfrey)	0.724065	0.6963
Residual Vector Hetroskedasticity Test (Breusch-Pagan-Godfrey)	12.61907	0.7004
Residual Vector Hetroskedasticity Test (ARCH)	0.252179	0.6155

Source: Own Computation using EViews

CONCLUSION AND RECOMMENDATIONS

Ethiopian economic history shows that there were three regimes that followed different political and economic ideology. The imperial regime of King Haile Sillase I had economic system of land tenancy in the traditional sector and free market in its infant modern sector. Land was the main economic resource and minority land aristocrats and majority peasants were the major economic agents. The regime devised three development plans during its stay in power and could achieve a sound economic growth. Land aristocracy, misery to the rural population, the limitation of the modern sector with only few light industries that seldom inter-related and the alienation of the ruling class from all segment of the population, however, contributed to the downfall of the long lasting regime. In 1974, the Derg, declared a command economic system that controls economic and political power through central planning of production and distribution. In doing so, the participation of private sector was discouraged and market forces were repressed. The regime launched a ten year development plan meant to promote import substitution strategies, labor intensive industries and public sector investment. However, economic growth was decelerated each year during the regime. This, among others, is mainly due to the hostile political environment, and hostile policies towards private sector, the nationalization measures, and the interference in industrial and agricultural activities. After the down fall of the Derg, the current EPDRF regime took power in 1991 and declared a liberal and market based economic system. With its three phases of structural and economic reform programs, various liberalization policies, reforms and strategies were developed and put in to action. Following the promotion of private sector participation and free market system, the economy has been growing fast. However, since 2005, the regime has applied economic system based on developmental state-led macroeconomic planning experiences of South East Asian countries.

Ethiopian economy is characterized as agrarian in terms of production as well as livelihood. Its GDP reached more than 48 billion USD in 2015 from less than 9 billion USD in 1992. In addition per capita income reached nearly 500 USD in 2015 from mere of 164 USD in 1992. Ethiopian gross domestic production is comprised from agriculture, industry and service sectors. Supporting the livelihood of 84 percent of the population, on average, agriculture share nearly 46 percent of GDP while industry share only less than 12 percent during 2004-2013. The growing service sectors could share more than 40 percent during the same years. Agriculture can definitely characterize the Ethiopian economy as it takes the lion's share in every corner of the country's economic activities. The role of agriculture ranges from supplying majority of export items, to providing potential opportunities for investment. Agriculture is also considered as the country's comparative advantage in international trade and the leading sector in the country's developmental endeavor. It has generally played a huge and foremost role in the history of Ethiopian economy. However, its share from GDP has been reducing recently and the service sector is growing fast at the expense of the industry. The industry sector is still underdeveloped despite its very essentiality for structural transformation. It can be said that structural transformation in Ethiopia is very low, slow and unhealthy as the reduction in the relative contribution of agriculture to GDP has not been transformed to developing the industry. In order to attain a fast and healthy economic transformation from the traditional agriculture to the modern industry, the fast growth of the later is unequivocally crucial. In addition, the growth of service sector should be checked, as which has little importance in value adding to economic development especially at a very infant and initial growth stage.

Ethiopia has one of the fastest growing economies in the world and the economy grew fast and consecutively for more than a decade. It has registered a double digit average growth rate per annum during the last decade. However, such a miraculous growth success has imperfections in which the benefit and real impact of the growth in improving the lives of the majority poor has been challenged. Ethiopia remained among the poorest country and Ethiopians among the poorest people in the world. Eight out of ten people in the country were multi-dimensionally poor in 2011, deprived from the very essential needs like education, health facilities, clean water, proper sanitation and cooking fuel. Nearly three fourth and more than one third of the population of the country lived below poverty lines of 3.10 USD and 1.90 USD per day in 2010 respectively. Poverty is very deep. The country accomplished below Sub-Saharan average in terms of human development index for health, education and income indicators combined. Moreover, the country has been experiencing one of the highest inflation in Africa for the last decade. This has immense consequence in deteriorating purchasing power of the people and decelerating its real income. The country is also experiencing widening income gap between the rich and the poor. The poorest ten percent of the population share only twelve percent of the income earned by the richest ten percent. In addition, the Gini coefficient for the country has also been increasing, depicting the growing income inequality. The country has also one of the highest unemployment rates worldwide. Total unemployed averaged to 16 percent during 2009-2012. In addition, on average nearly quarter of the active youth working force was unemployed and nearly quarter of the unemployed completed at least secondary education during the same period.

Thus, the growth has been counterbalanced by the growing unemployment and underemployment especially among the youth, the rising of cost of living especially in urban Ethiopia and widening income and wealth inequalities. It couldn’t be transformed well enough to changing the life of the majority poor. The registered success in the growth couldn’t assist the development of the country and betterment of living standards as was expected. In addition, there exists undetected poverty in the country. This resulted in underestimating the living condition of the people and overestimating the contribution of the economic growth. The poor cannot wait for economic transformation to be realizes in the long run. An income redistribution policies and strategies should be devised and put in to action so that the poor can reap the benefit of the growth. Effective policies and measures should also be developed to reduce inflation and unemployment especially in urban areas. Developing effective policies and strategies and putting them to action, however, needs a genuine move to evenly redistribute political power and democratize the country. This will in turn assist to evenly redistribute economic powers and reduce income inequality and poverty.

In addressing the main objective of the thesis, determinants of economic growth in Ethiopia is attempted to be estimated using time series data for the period 1980-2014. Considering available data, seven determinants of growth has identified through extensive empirical as well as theoretical literature survey. It applied Johansen's multivariate cointegration analysis and Error correction Model to capture the long run relation among the variables and estimate the short run growth equation. Granger Causality analysis was also used to observe the short run causation among the variables.

The result of the study reveals the presence of long run relationship between real GDP and its determinants. In the short run, health and education expenditure, domestic investment, foreign direct investment and inflation have found significant in affecting real GDP. Moreover, the short run causality analysis discloses that education and health expenditure, domestic investment, foreign direct investment and inflation are the main determinants of growth in Ethiopia. However, all growth determinants have found significant to jointly cause economic growth in the country.

The study reveals that expenditure on education and health was found important determinant of growth. Thus, it is growth-enhancing to invest further on human capital formation through expanding education, enhancing access to health facilities, ensuring quality of education and improving equality of opportunities. Since domestic fixed investment has found detrimental to growth in the short run, mainly because of the large share of public investment, it is important to optimize public expenditure on mega projects and infrastructure and reduce the "crowing out" effects on private investment towards widening the room for the development of the private sector. The short run estimation result discloses that openness to trade is insignificant to affect growth in the country. Thus, it is on the virtue of enhancing growth through trade openness by formulating effective policies, developing institutions and diversifying exports to high quality products, and hence improving the benefits obtained from trade. Since foreign direct investment is found growth-inhibiting in the short run, it is recommended that the county should strive to improve the stock and quality of human capital so that its absorptive capacity of advanced technologies will be developed. Inflation was found good for economic growth in the short run. However, it is growth-enhancing only when it is below a reasonable rate, as evidenced by many literatures. Thus, effective policies should be formulated and implemented towards controlling inflation higher than an acceptable rate, which otherwise has detrimental effect to growth in the country. The study has found freedom and democracy insignificant to affect economic growth in Ethiopia. It is thus, important to first develop the capacity of the economy to a threshold level of living standard from which freedom and democracy will be growth-enhancing. The government should also work towards developing and protecting economic, political and social institutions like property rights, trade unions, legal courts, political parties and civil society institutions. Democratizing the country will have unequivocal impact in promoting transparency and accountability, fighting corruption, avoiding bad governance and developing institutional practices. This will in turn assist to the effort that should be done to enhance economic growth and development, evenly distribute economic power and reduce poverty.

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APPENDIX

Appendix 1: Long Run Cointegration Test

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.930430	240.3815	159.5297	0.0000
At most 1 *	0.836674	152.4228	125.6154	0.0004
At most 2	0.583529	92.62644	95.75366	0.0805
At most 3	0.523142	63.72043	69.81889	0.1392
At most 4	0.399961	39.28275	47.85613	0.2492
At most 5	0.248362	22.42763	29.79707	0.2753
At most 6	0.216737	13.00610	15.49471	0.1146
At most 7 *	0.139152	4.944623	3.841466	0.0262

Trace test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.930430	87.95869	52.36261	0.0000
At most 1 *	0.836674	59.79633	46.23142	0.0011
At most 2	0.583529	28.90601	40.07757	0.4979
At most 3	0.523142	24.43768	33.87687	0.4240
At most 4	0.399961	16.85511	27.58434	0.5924
At most 5	0.248362	9.421533	21.13162	0.7971
At most 6	0.216737	8.061475	14.26460	0.3725
At most 7 *	0.139152	4.944623	3.841466	0.0262

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values
Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

LRGDP	LEHE	LGCF	LOPP	LFDI	LINF	FREE	DEM
17.31697	-0.496121	-7.050536	1.435766	-0.751809	-2.655235	0.202380	0.642770
-3.462443	2.316456	-0.823849	-6.327479	0.392676	-0.720794	-0.099963	-0.023685
-9.717039	-0.952440	6.254388	4.765877	-0.720944	1.872970	1.000556	0.791299
5.603859	0.903436	3.749114	-4.457607	0.033385	-8.954636	-2.006955	-0.094031
18.85267	-8.856145	4.535063	-1.954312	0.207006	-1.184553	0.290188	0.338081
0.034960	6.972205	-0.238687	-7.160510	0.181449	-11.11305	1.847174	0.357014
-13.01897	1.280662	8.014832	-4.018847	-0.009332	1.315763	-1.279826	-0.382805

-7.302377	2.297342	-3.078902	4.832646	-0.521627	1.958136	-0.563495	-0.217005

Unrestricted Adjustment Coefficients (alpha):

D(LRGDP)	-0.023422	-2.45E-05	0.007828	0.002128	-0.021824	-0.004264	-0.001496
D(LEHE)	0.023328	-0.001080	0.004379	0.018329	-0.011304	-0.014543	-0.029198
D(LGCF)	-0.039616	0.015896	-0.008058	-0.092597	-0.018704	-0.006524	-0.001589
D(LOPP)	0.007094	0.082488	0.015730	0.034453	-0.008198	-0.000989	-0.001900
D(LFDI)	2.195777	-0.364573	0.438043	-0.187556	-0.521508	-0.019680	0.229343
D(LINF)	0.023360	-0.015678	-0.024714	0.014735	-0.019389	0.023834	-0.000714
D(FREE)	-0.070624	-0.001291	-0.099260	0.119880	0.030572	-0.096370	0.080283
D(DEM)	0.440590	0.305935	-0.322481	-0.216612	-0.072283	-0.032365	-0.012112

1 Cointegrating Equation(s): Log likelihood 83.60810

Normalized cointegrating coefficients (standard error in parentheses)

LRGDP	LEHE	LGCF	LOPP	LFDI	LINF	FREE	DEM
1.000000	-0.028649	-0.407146	0.082911	-0.043415	-0.153331	0.011687	0.037118
	(0.03308)	(0.04345)	(0.04384)	(0.00415)	(0.04593)	(0.01064)	(0.00366)

Adjustment coefficients (standard error in parentheses)

D(LRGDP)	-0.405601
	(0.13868)
D(LEHE)	0.403978
	(0.29317)
D(LGCF)	-0.686023
	(0.57315)
D(LOPP)	0.122848
	(0.40049)
D(LFDI)	38.02419
	(5.25771)
D(LINF)	0.404525
	(0.25638)
D(FREE)	-1.222998
	(1.38433)
D(DEM)	7.629675
	(4.12889)

2 Cointegrating Equation(s): Log likelihood 113.5063

Normalized cointegrating coefficients (standard error in parentheses)

LRGDP	LEHE	LGCF	LOPP	LFDI	LINF	FREE	DEM
1.000000	0.000000	-0.436006	0.004862	-0.040283	-0.169505	0.010918	0.038473
		(0.04066)	(0.04342)	(0.00458)	(0.03399)	(0.01156)	(0.00404)
0.000000	1.000000	-1.007356	-2.724267	0.109304	-0.564524	-0.026834	0.047281
		(0.46769)	(0.49938)	(0.05274)	(0.39099)	(0.13291)	(0.04646)

Appendix 2: Wald Restriction Test on EHE

Vector Error Correction Estimates
Date: 04/14/16 Time: 19:35
Sample (adjusted): 1982 2014
Included observations: 33 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegration Restrictions:
A(2,1)=0
B(1,2)=1
Convergence achieved after 20 iterations.
Restrictions identify all cointegrating vectors
LR test for binding restrictions (rank = 1):

Chi-square(1)	2.539911
Probability	0.111001

Cointegrating Eq:	CointEq1
LRGDP(-1)	-34.67373
	(3.10336)
	[-11.1730]
LEHE(-1)	1.000000
LGCF(-1)	14.11699
	(1.57434)
	[8.96695]
LOPP(-1)	-2.795149
	(1.46233)
	[-1.91144]
LFDI(-1)	1.506640
	(0.14515)
	[10.3797]
LINF(-1)	5.239852
	(1.57107)
	[3.33522]
DEM(-1)	-0.437503
	(0.37152)
	[-1.17762]
POL(-1)	-1.288731
	(0.13786)
	[-9.34834]
C	246.3224

Appendix 3: Vector Error Estimates

Vector Error Correction Estimates
Date: 04/14/16 Time: 20:02
Sample (adjusted): 1982 2014
Included observations: 33 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1
LRGDP(-1)	1.000000
LEHE(-1)	-0.028649
	(0.03308)
	[-0.86603]
LGCF(-1)	-0.407146
	(0.04345)
	[-9.37059]
LOPP(-1)	0.082911
	(0.04384)
	[1.89101]
LFDI(-1)	-0.043415
	(0.00415)
	[-10.4640]
LINF(-1)	-0.153331
	(0.04593)
	[-3.33827]
FREE(-1)	0.011687
	(0.01064)
	[1.09808]
DEM(-1)	0.037118
	(0.00366)
	[10.1497]
C	-7.100296

Error Correction:	D(LRGDP)	D(LEHE)	D(LGCF)	D(LOPP)	D(LFDI)	D(LINF)	D(FREE)	D(DEM)
CointEq1	-0.405601	0.403978	-0.686023	0.122848	38.02419	0.404525	-1.222998	7.629675
	(0.13868)	(0.29317)	(0.57315)	(0.40049)	(5.25771)	(0.25638)	(1.38433)	(4.12889)
	[-2.92475]	[1.37796]	[-1.19693]	[0.30674]	[7.23209]	[1.57782]	[-0.88346]	[1.84788]
D(LRGDP(-1))	0.341767	0.130255	2.064012	-0.478377	-42.76414	-0.485504	1.648052	-8.813004

	(0.18438)	(0.38979)	(0.76204)	(0.53248)	(6.99038)	(0.34087)	(1.84054)	(5.48956)
	[1.85359]	[0.33417]	[2.70855]	[-0.89840]	[-6.11757]	[-1.42430]	[0.89542]	[-1.60541]
D(LEHE(-1))	0.214492	0.236847	0.682128	0.132877	-8.113929	0.375301	1.148281	-3.313279
	(0.09543)	(0.20173)	(0.39439)	(0.27558)	(3.61786)	(0.17642)	(0.95257)	(2.84111)
	[2.24773]	[1.17406]	[1.72957]	[0.48217]	[-2.24274]	[2.12734]	[1.20546]	[-1.16619]
D(LGCF(-1))	-0.106595	0.152884	-0.501250	0.497448	10.74744	-0.072231	-0.432011	2.425632
	(0.05829)	(0.12323)	(0.24092)	(0.16834)	(2.21001)	(0.10777)	(0.58189)	(1.73552)
	[-1.82864]	[1.24064]	[-2.08059]	[2.95498]	[4.86308]	[-0.67025]	[-0.74243]	[1.39764]
D(LOPP(-1))	0.056229	-0.142711	0.146085	-0.076558	2.419575	-0.212766	0.151684	-2.717263
	(0.06364)	(0.13453)	(0.26301)	(0.18378)	(2.41268)	(0.11765)	(0.63525)	(1.89468)
	[0.88358]	[-1.06080]	[0.55543]	[-0.41657]	[1.00286]	[-1.80847]	[0.23878]	[-1.43415]
D(LFDI(-1))	-0.007428	0.013479	-0.000907	0.005090	0.152310	0.014882	-0.060039	0.388331
	(0.00371)	(0.00784)	(0.01533)	(0.01071)	(0.14066)	(0.00686)	(0.03703)	(0.11046)
	[-2.00221]	[1.71861]	[-0.05913]	[0.47509]	[1.08285]	[2.16981]	[-1.62118]	[3.51563]
D(LINF(-1))	0.325547	0.153359	0.345631	-0.464202	-3.789475	0.183706	-0.117236	0.648805
	(0.08989)	(0.19003)	(0.37151)	(0.25959)	(3.40795)	(0.16618)	(0.89730)	(2.67627)
	[3.62163]	[0.80703]	[0.93035]	[-1.78819]	[-1.11195]	[1.10545]	[-0.13065]	[0.24243]
D(FREE(-1))	0.022183	0.052113	0.065841	-0.014533	-1.122747	0.056729	-0.144976	0.216680
	(0.02324)	(0.04913)	(0.09604)	(0.06711)	(0.88105)	(0.04296)	(0.23198)	(0.69189)
	[0.95457]	[1.06077]	[0.68552]	[-0.21654]	[-1.27433]	[1.32042]	[-0.62496]	[0.31317]
D(DEM(-1))	0.009851	0.018323	0.078327	-0.004901	-1.287850	-0.006733	-0.046190	-0.170392
	(0.00745)	(0.01575)	(0.03079)	(0.02151)	(0.28245)	(0.01377)	(0.07437)	(0.22181)
	[1.32231]	[1.16338]	[2.54389]	[-0.22778]	[-4.55958]	[-0.48884]	[-0.62110]	[-0.76820]
C	-0.016060	0.084510	-0.123632	0.024499	3.372786	0.044093	-0.245252	0.880042
	(0.01663)	(0.03515)	(0.06871)	(0.04801)	(0.63034)	(0.03074)	(0.16597)	(0.49501)
	[-0.96594]	[2.40443]	[-1.79921]	[0.51023]	[5.35076]	[1.43451]	[-1.47773]	[1.77784]

R-squared	0.603913	0.445449	0.518624	0.460871	0.859657	0.523746	0.250285	0.470671
Adj. R-squared	0.448923	0.228450	0.330260	0.249908	0.804741	0.337386	-0.043082	0.263542
Sum sq. resids	0.048677	0.217540	0.831457	0.405967	69.96659	0.166369	4.850431	43.14834
S.E. equation	0.046004	0.097254	0.190132	0.132856	1.744140	0.085050	0.459226	1.369677
F-statistic	3.896456	2.052775	2.753301	2.184603	15.65384	2.810394	0.853145	2.272359
Log likelihood	60.73957	36.03601	13.91291	25.74188	-59.22489	40.46094	-15.18721	-51.24922
Akaike AIC	-3.075126	-1.577940	-0.237146	-0.954053	4.195448	-1.846118	1.526498	3.712074
Schwarz SC	-2.621639	-1.124453	0.216341	-0.500566	4.648935	-1.392630	1.979985	4.165561
Mean dependent	0.054310	0.153071	0.093683	0.019451	0.290682	0.081775	-0.030303	0.121212
S.D. dependent	0.061971	0.110720	0.232329	0.153400	3.947076	0.104482	0.449642	1.596042

Determinant resid covariance (dof adj.)	1.56E-11
Determinant resid covariance	8.70E-13
Log likelihood	83.60810
Akaike information criterion	0.266176
Schwarz criterion	4.256862

Appendix 4: Coefficients of Error Correction Estimates

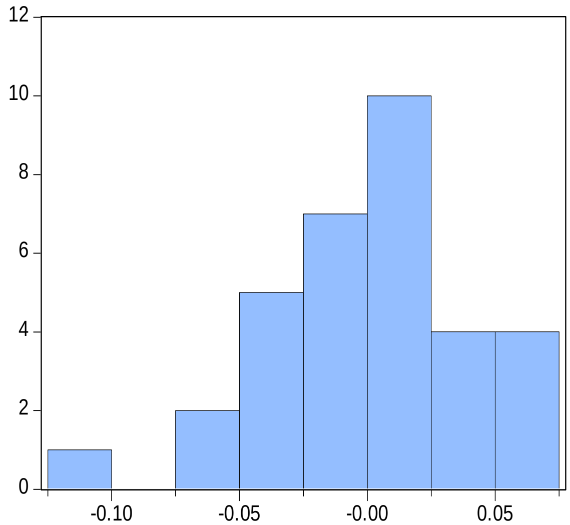
Dependent Variable: D(LRGDP)
Method: Least Squares
Date: 04/14/16 Time: 19:52
Sample (adjusted): 1982 2014
Included observations: 33 after adjustments
D(LRGDP) = C(1)*(LRGDP(-1) - 0.0286494144028*LEHE(-1) - 0.407146067324*LGCF(-1) + 0.0829109030541*LOPP(-1) - 0.0434145882911*LFDI(-1) - 0.153331371577*LINF(-1) + 0.0116868304915*FREE(-1) + 0.037117947941*DEM(-1) - 7.10029564036) + C(2)*D(LRGDP(-1)) + C(3)*D(LEHE(-1)) + C(4)*D(LGCF(-1)) + C(5)*D(LOPP(-1)) + C(6)*D(LFDI(-1)) + C(7)*D(LINF(-1)) + C(8)*D(FREE(-1)) + C(9)*D(DEM(-1)) + C(10)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.405601	0.138679	-2.924746	0.0076
C(2)	0.341767	0.184381	1.853590	0.0767
C(3)	0.214492	0.095426	2.247730	0.0345
C(4)	-0.106595	0.058292	-1.828644	0.0805
C(5)	0.056229	0.063638	0.883580	0.3861
C(6)	-0.007428	0.003710	-2.002210	0.0572
C(7)	0.325547	0.089889	3.621635	0.0014
C(8)	0.022183	0.023239	0.954565	0.3497
C(9)	0.009851	0.007450	1.322311	0.1991
C(10)	-0.016060	0.016626	-0.965940	0.3441

R-squared	0.603913	Mean dependent var	0.054310
Adjusted R-squared	0.448923	S.D. dependent var	0.061971
S.E. of regression	0.046004	Akaike info criterion	-3.075126
Sum squared resid	0.048677	Schwarz criterion	-2.621639
Log likelihood	60.73957	Hannan-Quinn criter.	-2.922541
F-statistic	3.896456	Durbin-Watson stat	1.986149
Prob(F-statistic)	0.004023		

Appendix 5: Diagnosis Tests

Residual Vector Normality Test (Jarque-Bera)



Series: Residuals	
Sample 1982 2014	
Observations 33	
Mean	-3.06e-16
Median	0.006441
Maximum	0.065012
Minimum	-0.119071
Std. Dev.	0.039002
Skewness	-0.755057
Kurtosis	3.999604
Jarque-Bera	4.509521
Probability	0.104899

Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.235553	Prob. F(2,21)	0.7922
Obs*R-squared	0.724065	Prob. Chi-Square(2)	0.6963

Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	0.619161	Prob. F(16,16)	0.8263
Obs*R-squared	12.61907	Prob. Chi-Square(16)	0.7004
Scaled explained SS	9.193675	Prob. Chi-Square(16)	0.9052

Heteroskedasticity Test: ARCH

F-statistic	0.238296	Prob. F(1,30)	0.6290
Obs*R-squared	0.252179	Prob. Chi-Square(1)	0.6155

VEC Granger Causality/Block Exogeneity Wald Tests
Date: 04/14/16 Time: 19:56
Sample: 1980 2014
Included observations: 33

Dependent variable: D(LRGDP)

Excluded	Chi-sq	df	Prob.
D(LEHE)	5.052292	1	0.0246
D(LGCF)	3.343938	1	0.0675
D(LOPP)	0.780714	1	0.3769
D(LFDI)	4.008843	1	0.0453
D(LINF)	13.11624	1	0.0003
D(DEM)	0.911194	1	0.3398

Appendix 6: VEC Granger Causality/Block Exogeneity Wald Tests

VEC Granger Causality/Block Exogeneity Wald Tests
Date: 04/14/16 Time: 19:56
Sample: 1980 2014
Included observations: 33

Dependent variable: D(LRGDP)

Excluded	Chi-sq	df	Prob.
D(LEHE)	5.052292	1	0.0246
D(LGCF)	3.343938	1	0.0675
D(LOPP)	0.780714	1	0.3769
D(LFDI)	4.008843	1	0.0453
D(LINF)	13.11624	1	0.0003
D(FREE)	0.911194	1	0.3398
D(DEM)	1.748506	1	0.3398
All	30.22604	7	0.0001

Dependent variable: D(LEHE)

Excluded	Chi-sq	df	Prob.
D(LRGDP)	0.111671	1	0.7383
D(LGCF)	1.539182	1	0.2147
D(LOPP)	1.125299	1	0.2888
D(LFDI)	2.953634	1	0.0857
D(LINF)	0.651298	1	0.4196
D(FREE)	1.125239	1	0.2888
D(DEM)	1.353455	1	0.2447
All	10.52305	7	0.1608

Dependent variable: D(LGCF)

Excluded	Chi-sq	df	Prob.
D(LRGDP)	7.336249	1	0.0068
D(LEHE)	2.991429	1	0.0837
D(LOPP)	0.308504	1	0.5786
D(LFDI)	0.003496	1	0.9529
D(LINF)	0.865547	1	0.3522

D(FREE)	0.469943	1	0.4930
D(DEM)	6.471394	1	0.0110
All	22.79377	7	0.0019

Dependent variable: D(LOPP)

Excluded	Chi-sq	df	Prob.
D(LRGDP)	0.807122	1	0.3690
D(LEHE)	0.232484	1	0.6297
D(LGCF)	8.731887	1	0.0031
D(LFDI)	0.225715	1	0.6347
D(LINF)	3.197618	1	0.0737
D(FREE)	0.046891	1	0.8286
D(DEM)	0.051886	1	0.8198
All	18.99923	7	0.0082

Dependent variable: D(LFDI)

Excluded	Chi-sq	df	Prob.
D(LRGDP)	37.42466	1	0.0000
D(LEHE)	5.029892	1	0.0249
D(LGCF)	23.64953	1	0.0000
D(LOPP)	1.005725	1	0.3159
D(LINF)	1.236434	1	0.2662
D(FREE)	1.623916	1	0.2025
D(DEM)	20.78979	1	0.0000
All	66.30060	7	0.0000

Dependent variable: D(LINF)

Excluded	Chi-sq	df	Prob.
D(LRGDP)	2.028632	1	0.1544
D(LEHE)	4.525591	1	0.0334
D(LGCF)	0.449241	1	0.5027
D(LOPP)	3.270559	1	0.0705
D(LFDI)	4.708070	1	0.0300
D(FREE)	1.743521	1	0.1867
D(DEM)	0.238961	1	0.6250
All	22.84220	7	0.0018

Dependent variable: D(FREE)

Excluded	Chi-sq	df	Prob.
D(LRGDP)	0.801771	1	0.3706
D(LEHE)	1.453123	1	0.2280
D(LGCF)	0.551204	1	0.4578
D(LOPP)	0.057015	1	0.8113
D(LFDI)	2.628209	1	0.1050
D(LINF)	0.017071	1	0.8960
D(DEM)	0.385771	1	0.5345
All	7.242558	7	0.4041

Dependent variable: D(DEM)

Excluded	Chi-sq	df	Prob.
D(LRGDP)	2.577348	1	0.1084
D(LEHE)	1.360000	1	0.2435
D(LGCF)	1.953389	1	0.1622
D(LOPP)	2.056795	1	0.1515
D(LFDI)	12.35967	1	0.0004
D(LINF)	0.058772	1	0.8084
D(FREE)	0.098076	1	0.7542
All	16.97949	7	0.0175

ÖZGEÇMİŞ

Kişisel Bilgiler

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Yabancı Dili

İngilizce

Yayınlar

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Hobiler

Gezi, Film ve futbol maç izleme, Kitap okuma, Resim çizme

GAZİLİ OLMAK AYRICALIKTIR

Gazili olmak ayrıcalıktır