ST. MARY'S UNIVERSITY

SCHOOL OF GRADUATE STUDIES

THE NEXUSES BETWEEN INVESTMENT, TRADEOPENNESS AND ECONOMIC GROWTH IN ETHIOPIA: A TIME SERIES ANALYSIS

DAGIM NIGUSSIE

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BY

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DECLARATIONS

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

Declared By:

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Place and date of Submission_____

ENDORSEMENT

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

_____ _____

Advisor Signature

St. Mary's University, Addis Ababa June 2019

APPROVAL SHEET

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As members of board of examining of the final MA thesis open defense, we certify that we have read and evaluated the thesis prepared by Dagim Nigussie under the title "**The Nexuses Between Investment, Trade openness and Economic Growth In Ethiopia: A Time Series Analysis**" we recommend that this thesis to be accepted as fulfilling the thesis requirement for the Degree of Master of Art in Development Economics

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List of Acronyms

ADF: Augmented Dickey-Fuller

AIC: Akaiki Information Criteria

AR: Auto Regressive

ARDL: Autoregressive-Distributed Lag

BOP: Balance Of Payments

CAPRI: Collective action and property Rights

ELG: Export-led growth

FPE: Final Prediction Error

GDP: Gross Domestic Product

GMM: Generalized Method of Moment

GNP: Gross National Product

HCA: Human capital

HQ: Hannan-Quinn Information Criteria

IRF: Impulse Response Functions

IS: Import Substitution JB: Jarque-Berra

LDCs:Less Developing Countries

LM: Lagrange Multiplier

LOP: Law of One Price

NBE: National Bank of Ethiopia

NTB: Non-Tariff Barriers

OLS: Ordinary Least Square

OPE: Trade openness

PP: Phillips-Perron

PPP: Purchasing Power Parity

RIG: Real public investment

RIP: Real private investment

SDG: Share Dealing Group

SFDP: Second Five Year Development Plan

SSA: Sub-Saharan Africa countries

TGE: Transitional Government of Ethiopia

TGE: Transitional Government of Ethiopia U.S : United States UN : United Nation

VAR: Vector Auto regression

VDC: Variance Decompositions VECM: Vector Error Correction Model

WDR: World Development Report

TABLE OF CONTENTS

LIST OF TABLES

Abstract

This paper examines the nexus between investment, trade openness and economic growth in Ethiopia. At nationwide level the achievement of sustainable rapid economic growth along with increasing amount of investment with optimal international trade is the central policy objective of most countries. The objectives of this study are to investigate the interrelations among investment, trade openness and economic growth. The study uses a combination of descriptive statistics and time serious econometric models using secondary data source obtained from NBE and MOFED in period 1980-2018. The result to the study has revealed there is no causal relationship between trade openness and GDP but investment shows a positive impact on economic growth. The relation between investment and trade openness appears to be complementary. Therefore the recommendations of this study are that the central government should encourage domestic and foreign investment and that the Ethiopian government should place high emphasis on the investment sector. Accelerating trade is also essential due to its positive impacts on investment.

Key Words: Investment, trade openness and economic growth in Ethiopia

CHAPTER ONE

INTRODUCTION

1.1. Background of the study

Economic growth is the steady course of action through which the productive and fruitful capacity of an economy is improved in due course to produce increasing levels of national output and income (Todaro and Smith, 2005).Since the early 1970s, the issue of accelerated economic growth has been the main agenda in economic policy formulation for most of the Sub-Saharan Africa countries (SSA) and other developing countries of the world (International Monetary Fund (IMF, 2015). Hence, a number of development economists and government policy makers have paid significant attention to reviewing the experiences of these countries to promote economic growth and improve their living standards.

Improving investment and creating an attractive investment climate is one of the most important goals of any country, because investment plays a vital role in economic growth by providing a source of output, income and employment creation in the country. Besides, trade openness can motivate investment through simplifying import and export procedures which in turn encourage producers to increase and improve their production and investment in the country (WB, 2016).

Recently, economists have developed a common opinion about the constructive effect of sustainable investment on economic growth. Moreover, the sustainability of investment depends on the investment climate (World Bank, 2016). In general, the investment climate refers to the totality of macroeconomic, political, policy, and institutional conditions in a country that, together with structural forces, determines the performance of private investment and economic growth (WB, 2013).

Ethiopia is a nation with a population of 102 million, a GDP of 79.7 billion, GDP growth rate of 7.56%, per capita income of $783 (WB, IMF, Trademap 2016/17). Ethiopia's economy experienced strong, broad- based growth averaging 10.3% from 2006/07 to 2016/17.The Ethiopian economy which had showed 9.3 present average annual growth during 2013/14 - 2017/18 fiscal years, recorded 7.7 present growth in 2017/18 fiscal year, slower than the growth

rate registered in the previous year owing to growth deceleration in agriculture and industry sectors (NBE 2017).

The Ethiopian economy registered 7.7 present growths in 2017/18, slower than the 10.9 present expansion recorded in the previous year. This growth was attributed to 12.2 present rises in industrial output, 8.8 present expansions in service sector and 3.5 present growths in agriculture. Compared to the regional average of 4.9%. Expansion of the services and agricultural sectors account for most of this growth, while manufacturing sector performance was relatively modest. Private consumption and public investment explain demand side growth with the latter assuming an increasingly important role in recent years. Consequently, the share of investment in GDP rose to 27 percent in 2017/18 from about 26 percent in 2016/17 while that of service increased slightly to 39.2 percent from 38.8 percent in 2016/17. In contrast, the share of agriculture fell to 34.9 percent in 2017/18 from 36.3 percent during the same period. This gradual but steady shift in the structure of the economy reflects the government's policy direction of developing manufacturing sector and promoting export-led growth while continuing to give due attention to modernizing the agriculture sector which has dominated the country's economic base for years (NBE, 2017).

Constantly increasing globalization and integration of the world is carried out mostly through merchandise trade; nowadays wide varieties of goods are involved in merchandise trade. International trade of services is also gaining momentum in trading on a global scale (konoema, 2018). It can be argued that through trade openness countries are able to benefit from information spill overs such as scientific advances and improvements. Trade openness of a county is given by its export plus import as a percent of GDP the average value for Ethiopia is 31.45% on 2016/17 period the maximum level of openness that Ethiopia reached was recorded on 2011, 48.23% (IMF, 2015).

According to NBE (2017), Ethiopia recently engaged in various trade initiatives, including application of accession to the World Trade Organization and negotiations with the European Union on an Economic Partnership Agreement and with African regional partners toward a Tripartite Free Trade Area (TFTA). The overall objective of all of these trade initiatives is to increase the contribution of foreign trade to the economy. Hence, an empirical investigation to determine the contribution of international trade to economic growth is essential. In general, the

main aim of this paper is to empirically analyze the nexus between investment and international trade on Ethiopia's economic growth.

1.2. Statement of the problem

The issue of whether nexuses exist between private investment, public investment, trade openness and economic growth is a long standing one in macroeconomics and development economics and has attracted renewed attention in recent years. Classical economists argued that an increase in public investment financed by borrowing reduces loanable funds for private investment, increases the interest rate and crowds out private investment. In contrast, Keynesian economists argued that increases in public investment improve infrastructure as a result of stimulating private investment and productivity because public investment can reduce the costs of production for firms and, consequently, attract private investment. Thus, the net effect of public investment on private investment depends on the magnitude of the crowding-in or crowding-out (IMF, 2015).

Recent years have seen a major controversy over the nature of the relationship between trade openness and economic growth. According to the current orthodox view, trade openness is essential for growth. Countries that liberalize their imports and orient production toward exports are assumed to experience faster growth than those countries that do not, and a faster rate of opening provides greater prospects for development. In recent years, the orthodox view has been challenged by empirical studies showing the lack of a relationship between the degree of trade liberalization and the rate of growth. These studies have raised doubts about the policy prescription of rapid trade liberalization. Empirical evidence that shows the negative consequences of rapid import liberalization on industrial and agriculture sectors in many developing countries is also growing.

Investment is a key economic variable in the effort to achieve economic growth and development. In Ethiopia like other developing countries investment is lower as a percentage of GDP. Therefore, to sustain high economic growth, increasing the amount of investment as a percentage of GDP is crucial. However, implementing policy recommendations such as this should be supported by empirical findings before resources are committed. Thus whether investment determines GDP growth needs to be empirically proved. Therefore, the basic aim of

this study is to investigate the effects of investment, i.e. joint public and private investments on Economic Growth in Ethiopia over the last three decades (zenebe, 2014).

The existing pool of evidence on the growth effects of the growth effects of investment and trade openness, as well as the reciprocal effects, is hardly sufficient rendering their connections to remain inconclusive the inefficiency of such studies is chronic when it comes to the Ethiopian economy the investment, trade and growth connection have not been researched well (Ethiopian economics association, vol18 (2)).

A study by Tigist et al (2015) empirically determined the causality relationship between agricultural exports and economic growth (GDP) in Ethiopia and found bidirectional relationship between coffee export, oilseed exports and economic growth whereas unidirectional relationship was found between pulses export and economic growth which is running from pulse export to economic growth (GDP). (Alberto, 2012) with the application of Granger causality test found a result that supports export led growth strategy for Ethiopia. However, these studies did not include some other relevant variables such as external debt, exchange rate, external debt servicing, etc. that could have significant relationship with the two variables in question (Saad, 2012). Against this backdrop, this paper employs a multivariate time series estimation approach to investigate the nexuses between public investment, private investment, trade openness and economic growth in Ethiopia.

1.3. Objectives of the study

The general objective of this study is to investigate the nexuses between public investment, private investment, trade openness and economic growth in Ethiopia. The specific objectives of the study are as follows:

- To investigate the effects of investment and trade openness on economic growth;
- To examine the effects of investment on trade openness;
- To examine the effects of trade openness on economic growth.

1.4. Hypothesis of the study

Based on the empirical literature on the interaction between economic growth, trade openness, and private and public investment in developing countries, the study proposes the following working hypotheses to hold true in my analysis.

- Trade openness has a significant positive effect on economic growth.
- Investment has a significant positive effect on economic growth.
- Investment has a significant positive effect on trade openness in Ethiopia.

1.5. Significance of the study

Generally, the result of this study conveys some important messages about the nexuses between trade openness, public investment and private investment on economic growth. This information can benefit the society as a whole. Furthermore, identifying a link between economic growth and public and private investment can point the government towards the sectors of the economy that need more attention. The findings of this study also aim to create a link between economic growth and trade openness which shows weather Ethiopia should be more internationally open or restrict trade with international partners. Moreover, the implications from the analysis of the nexuses between public, private investment, trade openness and economic growth in Ethiopia would help in dictating the formulation of Ethiopia's industrial strategy and policy.

1.6. Scope and Limitation of the study

The aim of this study is limited to investigating the nexuses between trade openness, public investment and private investment on economic growth in Ethiopia using annual time series data. The study employs co-integration and vector error correction approaches. Although a number of studies have been conducted on investment growth nexus and trade growth nexus, especially in developing countries, empirical evidence on the nexuses between trade openness, public investment, and private investment on economic growth is limited (Khan and Kumar, 1997). Concerning Ethiopia, the relationshipbetween private investment, public investment and economic growth has been analyzed by Khan and Kumar (1997) in a cross-sectional study among four developing country regions: Africa, Asia, Europe and the Middle East, as well as

Latin America. Therefore, isolating the effect of each variable on the economy of Ethiopia is hardly possible. Moreover, investment, trade and growth nexuses are not well documented.

This study is affected by the limitation of Important and reliable time series data, that could be included as explanatory or independent variables in the model are not available. This problem may exert impacts on predicting power of the model.

1.7. Organization of the study

The remainder of the thesis is organized as follows. Chapter two reviews both the theoretical and empirical studies related to the topic. Chapter three discusses the model specification, data types and sources, and also estimation techniques. Chapter four is devoted to an analysis of trends in international trade, private and public investment and economic growth in Ethiopia and also presents empirical analysis and findings of the study, and chapter five provides conclusions and policy implications.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 Review of the Theoretical Literature

2.1.1 Classical Theory of Economic Growth

The classical economists Adam Smith, David Ricardo and John Stuart Mill were primarily concerned with the dynamics of the economic growth of a capitalist economy (Dudley, 1988). They argued that population growth and capital accumulation are the necessary conditions of growth (Denis and Paul, 2000). The forces of diminishing returns and technological advancements determine the pace of economic growth. Capital accumulation, which itself is determined by the rate of profits, has two effects: it creates demand for labor and it fosters technological improvements by facilitating the division of labor.

The population, which tends to grow rapidly, increases the demand for food. Food production is subject to diminishing returns. Thus, we have two forces working in opposite directions: technological advancements that promote growth and the eventuality of diminishing returns that retard growth. Thus, the long-term trend of the economy depends on the relative strength of these two forces (Mark, 1987).

Classical theorists have postulated production to be written as a function of four variables:

land*(N),* labor *(L),* capital *(K),* and technology *(T)* (Eltis, 2000).

$Y = f(N, L, K, T)$ …… (2.1)

2.1.2. Harrod–Domar Growth Model

The Harrod–Domar model is used in development economics literature to explain an economy's growth rate in terms of the level of savings and the productivity of capital. Long before the neoclassical theories, the Harrod–Domar model was the most popular model to contribute to aggregate growth theory (Mansour and Fatimah, 2011).

Easterly (1998) noted that this model was initially used to calculate the required amount of funds needed to bridge the gap between savings and the required level of investment to achieve the desired growth rate. Therefore, the limit on the rate of growth results from factors that constrain the savings rate. The model argues that a steady accumulation of physical capital through savings and investment results in higher levels of economic growth. In other words, savings and, hence, investment are important components for economic growth (Hansen and Tarp, 2000). Nevertheless, an assessment of the model shows that it has a basic limitation resulting from its underlying unrealistic assumption that growth is proportional to capital stock. That is, this assumption implies that any growth target is achieved given the availability of funds for capital accumulation.

2.1.3. Neoclassical Growth Model

Long before neoclassical theories, the Harrod–Domar model was the most popular economic growth model and made the first important contribution to aggregate growth theory. The aggregate growth models were extended in the 1950s and 1960s, with Solow's classic articles playing a leading role. Solow (1956) showed that the rates of savings and population growth, taken exogenously by assuming a standard neoclassical production function with decreasing returns to capital, determine the steady state level of income per capita, which is exogenous. These exogenous neoclassical growth models were extended in the late 1980s and early 1990s to endogenous growth models (Romer, 1986; Lucas, 1988; Rebelo, 1991).

The conventional neoclassical model is often praised for its simplicity and flexibility in identifying the core determinants of long-term growth (Rodrik, 2003). The Solow type neoclassical growth model developed in 1956 is one of the most influential models that has shaped much of modern thinking on the process of economic growth and marks the starting point of conventional economic growth theorization (Solow, 1956).

The model shares some assumptions with the classical growth model such as the law of diminishing returns to scale in the short run and the existence of constant returns to scale in the long run. Additional assumptions include exogenously determined technical progress and substitutability between capital and labor (Cypher and Dietz, 2004). The Solow-type model can be depicted by a simple Cobb–Douglas aggregate production function as:

$Y = (AL)^{1-\alpha} K^{\alpha}$ ……..(2.2)

Where $0<\alpha<1$, A is technological progress, L is labor force, K is capital, AL is the effective labor force, and $1-\alpha$ and α are income shares of labor and capital

A represents exogenous technological progress, assumed to be available to all economies at the same rate. According to the model, this exogenous technological progress is fundamental to a higher level of per capita income because, assuming constant labor, the increased use of input in production through investment, K, has a limit in terms of total income and, hence, per capita income (Cypher and Dietz, 2004).

Assuming that the rates of growth of technological progress (A) and the labor force (L) are constant, and the labor force is fully employed, the Solow growth model states that, for any given level of savings and investment, there will be a steady state level of real per capita income. This concept is a direct corollary of the assumption of diminishing returns to capital (K), i.e., given a constant rate of savings (which by definition equals investment), the return of capital for investors decreases as the stock of capital increases. Ultimately, the total amount of capital also reaches a steady state level at which all savings are needed to compensate for depreciation and population growth. The model asserts that when the total stock of capital reaches a steady state level, the level of per capita income of a country will have reached its maximum.

Accordingly, the Solow model suggests that the difference in per capita income is explained by the difference in the savings rate and population growth, which in turn implies that, all else being equal, a higher rate of savings increases the steady state level of per capita income. In Solow's formulations, countries that do not save or invest a high proportion of their income remain poor. Given this phenomenon, more rapid accumulation of physical capital, as suggested by Solow, is at the heart of many economists' policy recommendations for increasing economic growth in less developed countries.

Foreign trade is another variable that influences private investment and, ultimately, economic growth. According to neoclassical thinking, openness to trade has many advantages, such as efficiency gains that come with specialization and competition from international trade; embodied technological transfer through imported inputs; scale economies arising from expanded markets; and diffusion of ideas through global interaction (Piazolo, 1995; Zhang and Zou, 1995; Harrison, 1996;

Frankel and Romer, 1999). In contrast, competition arising from openness to trade may discourage innovation by making investment in research and development less profitable. Underdeveloped domestic industries are exposed to competition from imports, whereas exports are often exposed to very volatile world markets. Although the literature on trade and growth tends to focus on exports, justifications exist for including imports as part of foreign trade; imports represent imported technology, capital, and intermediate goods that can be used for investment.

2.1.4 Endogenous Growth Models

The endogenous growth models developed by Lucas–Romer challenged the old neoclassical model by emphasizing the role of endogenous factors (i.e., human capital stock and R&D activities) as the main engines of economic growth. Whereas early neoclassical models assumed total factor productivity growth (or technical progress) as exogenously given, the newer endogenous growth models attributed this component of growth to the "learning by doing" effect that occurs between physical and human capital, which results in increasing returns to scale in production technology (Lucas, 1988).

The most distinctive difference between neoclassical exogenous and endogenous growth theories is that the former assumes constant returns to scale, whereas the latter generally assumes increasing returns to scale. Making the assumption of increasing returns to scale provides a possible path to long-run sustained growth in endogenous growth theories. These endogenous economic growth theories emphasize that opening investment opportunities under a liberalized market friendly economy results in high economic growth. Moreover, the World Bank gap model, which is offered as an alternative framework for growth, hypothesizes that growth of real output is related to total investment, where investment is considered to be one of the demand factors in determining growth.

The endogenous growth model arose in the mid-1980s from dissatisfaction with the standard neoclassical growth model as a tool to explore long-run growth determinants. The relatively slow progress of many African and South Asian economies has led to a critical examination of the policy recommendation from neoclassical growth theory. The policy recommendation refers to the argument that accumulation of capital is all that a nation needs if it seeks to raise its per

capita income and refers to the optimistic belief in the convergence of per capita income of poor and rich nations over time (Barro and Sala-i-Martin, 2004; and Cypher and Dietz, 2004).

In the endogenous growth framework, as noted by Cypher and Dietz (2004), a higher level of investment not only increases per capita income but also serves to achieve sustained rates of growth in future per capita income.

According to Barro and Saia-i-Martin (2004), one way to tackle the problem of per capita growth converging to zero at the steady state because of diminishing returns is to broaden the concept of capital, particularly to include human components, as diminishing returns did not apply to this broader class of capital.

In contrast to the neoclassical model, capital has increasing returns to scale, and technology is not assumed to grow at the same rate for all countries, irrespective of the countries' particular reality but "dependent on the functioning of the particular economy". Furthermore, the model holds that growth "is an endogenous process, coming from within each particular economy, with each having a different production function reflecting different quantities and qualities of its inputs" (Cypher and Dietz, 2004).

The endogenous growth model enables countries to continue to grow quickly for long periods of time, even when they have already achieved relatively high income without an increase in the savings rate. Consequently, the endogenous growth model is able to invalidate the convergence thesis of per capita income between poor and rich countries by disregarding the implicit assumptions of the neoclassical growth model. In other words, the endogenous growth model broke the link between the rate of economic growth and the law of diminishing returns and removed the maximum limit on income per person for any particular rate of savings and investment.

The model indicates that government policies for the rate of capital accumulation could affect this rate for both physical and human capital, as well as the level of research and development expenditures. According to Cypher and Dietz (2004), government policies play a vital role in spurring the long-run rate of growth for an economy.

Endogenous growth theories assign an important role to investment in both the short term and the long term; Levine and Renelt (1992) and Sala-i-Martin (1997) identify investment as a key determinant. High investment ratios do not necessarily lead to rapid economic growth; the quality and productivity of investment, the existence of appropriate policies, and the political and social infrastructure are all determinants of the effectiveness of investment (Hall and Jones, 1999; Fafchamps, 2000; Artadi and Sala-i-Martin, 2003).

2.1.5. Trade Openness and Public Investment Hypotheses

There are three main set of hypotheses related to trade openness and public investment nexuses; Efficiency hypothesis, Compensation hypothesis and industrialization hypothesis. According to the efficiency hypothesis globalization imposes a constraint on government expenditure due to efficiency reasons. In fact, government expenditure has to be financed through taxation, raising production costs, and therefore harming firms' competitiveness. For that reason, firms can lobby on governments in order to reduce public intervention, protection and expenditure to reduce costs and then to enhance their competitiveness on the global markets (Garrett, 2001).

Moreover, as capital flows are liberalized, taxes on capital are constrained. An increase in taxation of capital is an incentive to capital outflows, therefore governments who want to finance their expenditure should rely on taxes hitting less mobile production factors, such as labor. However, if taxes on labor income increases, labor costs increase too, affecting negatively firms' competitiveness (Alesina and Perotti, 1997). Therefore, according to the efficiency hypothesis, a negative relationship between trade openness and government spending can be expected.

The compensation hypothesis puts emphasis on the incentives for government interventions in the economy in order to protect national economic agents following globalization. Some authors, like Ruggie (1982), Garrett (1998a) or Rodrik (1997) recognize that there persist political incentives to expand the public economy in response to globalization that may counterbalance the competitiveness pressures consequent on market integration. According to Hecksher-Ohlin models, expanding trade may reduce demand for relatively scarce factors of production and increase demand for plentiful ones, which demands government intervention.

But, according to Rehm (2005), the two forces (the efficiency hypothesis and the compensation hypothesis) can counterbalance each other, in which case empirical results would show no

significant associations between trade liberalization and the size of government – the deindustrialisation hypothesis. Iversen and Cusack (2000) argue that there is no direct causal relationship between trade liberalization and public sector size.

2.2. Review of the Empirical Literature

2.2.1 Relationship between Trade Openness and Growth

To date, the available empirical literature on the relationship between trade openness and growth is divided into two categories: cross-sectional studies and time series studies. Within these categories, it is possible to classify further the empirical studies under discussion into early and recent because of the discernible difference in their assertions regarding the link between trade openness and growth (Nabeela*et al.*, 2011). In both the earlier and recent classifications of empirical studies, the disagreements over the analysis of the effects of trade on economic growth focus on the following three issues: the construction of a single appropriate trade openness index, the use of cross-section analysis and the direction of causality (Hamori*et al*., 2003).

Sarkar (2005) used indices of import per GDP, export per GDP and trade per GDP as a measure of trade liberalization. He examined the time series evidence to investigate the relationship between trade liberalization (Trade openness) and real growth rates in India and Korea. Using three indicators of liberalization and annual data for a period from 1956 to 1999 for India and from 1956 to 2000 for Korea and based on the application of ARDL approach to co-integration the study found that there is no positive long run relationship between Trade openness and growth for both countries.

Asghar*et al*. (2011) explored the connection among economic growth, openness, income inequality, education, and health in Pakistan by using annual time series data for the period 1974–2009. The study, employing the Johansen and Juseliuscointegration test, corroborated the long-run relationship among the variables and VECM to check the short-run and long-run dynamics. To observe the causality, they used the Toda–Yamamoto causality test. Their result supports a strong positive effect of openness of trade on economic growth in the long run. One major criticism labeled against Asghar*et al.* (2011) is the problem of a missing variable (in this

case, investment) that could influence the outcome because this variable is an important factor that affects growth.

The empirical results from a study by addisassefa reveal that the existence of co-integration relationship between economic growth and openness. In the long run, except for labour force, all others variables exerted positive impact on real GDP per capita but the variables real exchange rate, and labour force have insignificant impact on real GDP. While the variable openness remains statistically significant both in the long run and the short run and also dummyvariable highly significant in the long run. However, the labor force has expected positive sign in the short run.From the result we also found that both in the long run and short run the direction of causality runs from openness to real GDP per capita growth not the other way round.

The feedback coefficient has the expected negative sign and significant, which supports the co-integration between the variables real GDP per capita and trade liberalization and also its coefficient suggests that a fast rate of adjustment towards the long run equilibrium (addis, 2008)

2.2.2 Relationship between Trade Openness and Public Investment

The link through which trade openness affects public expenditure is a point of analysis for most researchers. One way or another, many studies claimed that openness affects public expenditures through the higher specialization that trade offers and interest groups (Cameron, 1978; Swank, 1983; Schmidt, 1983). Still others such as Rodrik (1996, 1998) argue that their link lies in the external risk (shock), whereas others maintain that the link between the two depends on the size of the country under consideration (Alesina and Wacziarg, 1998). Authors such as Saunders and Klau (1985) cite economies of scale in the provision of public goods and services as the link between trade openness and expenditure. The following review of empirical studies consists of cross-sectional and time series analyses for both developed and developing countries.

Cameron (1978), emphasizing the link between higher specialization and interest group, created pioneering work that established the connection between trade openness and public expenditure. The motivation behind his research is attributable to the unprecedented growth in the public sector in developed economies after the Second World War when the welfare state began to merge. Using a sample of 18 developed capitalist countries for the period from 1960–1975, the

main result of his analysis established that public sector expansion was primarily explained by trade openness. Cameron (1978) maintained that a high level of competitiveness and industrial concentration characterize open economies, which in turn generate higher levels of specialization. According to Cameron, this higher level of specialization favors union organizations (interest groups) that lead to an increase in social public incomes. Thus, for Cameron, openness has a positive effect on public expenditures through increased specialization.

Swank (1983) forwarded different explanations for the rise of the welfare state and tested Cameron's argument for 17 developed economies. Swank used Cameron's model with the inclusion of interest group variables and determined that the openness variable remains positive and significant. Swank contended that the increase in public sector expenditure attributable to openness wards off the pressure from international markets. Following Cameron's lead, Swank confirmed the positive connection between openness and public sector spending for the 17 developed economies.

In parallel with Swank, Schmidt (1983) corroborated the finding of Cameron. Schmidt's study on 22 developed countries stretched through three periods: the post war reconstruction (1950–1960), Cameron's data period (1960–1975), and the world economic crisis period (1974–1978). He ascertained that public sector expansion as manifested by taxes and social security contribution as a percentage of GDP rises and falls in the same direction as openness.

Recent empirical research reaffirmed the positive link between trade openness and public spending that was already established by early empirical evidence. Some such studies include Garrett (2001), the UN-World Public Sector Report (2001), Martínez-Mongay (2002), Islam (2004), Garen and Trask (2005), Shelton (2007), Gemmell*et al.* (2008), Ram (2008) and Rivas, Sort and Rodriguez (2010).

Rivas, Sort and Rodriguez (2010) embarked on a study to reveal the empirical link between trade openness and public expenditure in Spain during 1960–2000, a period during which both growth in public expenditures for goods and services and openness increased. By applying the Johansen cointegration test, the time series analysis revealed a positive relationship between public expenditures and openness, along with several protection indicators.

Sanjeev (2010) used data pertaining to 42 sub-Saharan economies to estimate the relationship between trade openness and public spending. These data have been averaged for the period 2000-2005, it is found that, that greater openness tends to drive public sector size bigger. All of the aforementioned empirical studies demonstrated a discernible positive link between openness and public sector expenditures, the causality being unidirectional from openness to public expenditures. However, other studies by Ferris and West (1996), Ferris (2003) and Borcherding*et al.* (2004) demonstrated the opposite (negative) link between the two variables.

However, this result is despite Abizadeh's (2005) finding that confirmed the positive relationship between the two variables for the same country (the United States) for the period 1960–2000.

Molana*et al*. (2004) studied the Spanish economy for the period 1948–1998 and 22 OECD countries to determine the link between trade openness and public expenditures using Johansen's co-integration test. Their findings revealed that no co-integration exists between the two variables and no long-term causality was observed. According to Molana*et al.* (2004), unsuitable measurement of the variables employed in the analysis is responsible for the findings, particularly the measure of openness.

2.2.3. Relationship between Investment and Economic Growth

Various researchers conducted a large number of empirical studies (time series and mostly cross-sectional) and investigated the effect of public investment on economic growth. Studies by Bose et al (2007) conducted a panel data for 30 developing countries and they found out that if thebudget deficit is a result of productive spending then the budget deficit will have positive impact on economic growth. Odhiambo et al. (2013) found out that there is a positive relationship between budget deficit and economic growth by using causality techniques. A variety of studies on the same issue concluded with no significant relation between budget deficit and economic growth. Velnampy and Achchuthan (2013) analyzed the impact of fiscal deficit on economic growth for Sri Lanka and they found no significant relation. Rahman (2012) found out that there is no relation between economic growth and budget deficit in the long run, however they found out that there is a positive relation between increase at productive budget expenditure and economic growth.

In a recent study, Tchouassi and Ngangue (2014) empirically examined the relationship between private investment and public capital expenditures in a panel of fourteen African countries over 32 the period 1980-2010. Their findings provided clear evidence that the complementarity effect between private investment and public capital investment is not justified; rather support the idea that private investment is a substitute of public capital and basic infrastructure expenditure. Despite the earlier outlined empirical arguments, Dissou and Didic (2011) indicate that the crowding-out effects of public infrastructure is sensitive to the mode of financing chosen by the government. Overall, their findings suggest that public investment in infrastructure can support private investment and sustain capital accumulation.

The positive impact of public investment on private investment can be explained through the infrastructure financing channels such as public private partnerships and subcontracting which in turn tend to crowd-in private investment (Dissou and Didic, 2011). It is noted in many studies (for instance Corong et al (2012), Zhang et al (2012) and Ahmed et al (2013)) noted that the impact of public infrastructure investment on private investment is sensitive to the modes of financing. Corong et al (2012) has investigated the role of public infrastructure investment in Philippines through analyzing the two modes of financing public infrastructure: international borrowing and production taxes.They found, under international financing, the expansion of public infrastructure investment leads to the crowding-in effect. The main driver of this effect is international capital inflows which finance increased public investment expenditures. Hence, in the absence of higher production taxes, domestic firms enhance their profitability by producing more capital goods and by accumulating private capital stock. However, when public infrastructure investment is financed by higher production taxes, Corong et al (2012) argue that, there is a slight reduction in private investment results from a crowding-out effect.

This crowding-out effect is caused by higher prices of investment goods and the higher production tax rate imposed on firms in order to balance the government budget. Total private investment thus falls. In similar vein, Ahmed et al (2012) argued that the public investments stimulates private investments via improved productivity in China whether it funded by taxation or international borrowing.

Most recently, Ahmed et al (2017) used a dynamic CGE model linked to a micro-simulation model to estimate the macro-micro impact of public infrastructure investment in Pakistan under

the two modes of financing infrastructure (i.e. production tax and foreign borrowing). Under production tax financing, they found in their simulation the overall investment increased in the long run mainly comes from public infrastructure investment.

There are also positive knock-on effects on private investment providing evidence of crowding-in effect. They note that private investment is higher despite a production tax due to complementarities in public and private investment. However, in the short term there is a negative impact on private investment at the disaggregated level and a null effect on the capital stock. On the other hand, when public infrastructure investment financed by foreign borrowing the lower cost of capital facilitates long run expansion of private capital stock. Generally, Ahmed et al (2017) concluded that public infrastructure investments have the same direction of impact whether funded by taxation or international borrowing in the long run but in the very short run, tax financing puts a strain on the industrial sectors and thus reduces private investment in the short run.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Research Design

This section presents the methodology and outlined the methods of research; provide guidance to implementation of the research towards the realization of the objectives by considering the underpinning theories and the research model.

3.2. Data types, source and method of collection

The study uses annual secondary data obtained from the National bank of Ethiopia and MOFED. The data used in this study were obtained from different sources. Time-series data on GDP, capital formation, exports, and imports were collected from the National Bank of Ethiopia and MOFED. The study period ranges from 1980 to 2018, representing a sample size of 39 observations. The variables are described in table 3.1 with their expected sign based on the economic theory.

3.3. Econometric Framework and Model Specification

3.3.1. Model specification

In this study, the real Gross Domestic Product (RGDP) growth is used as a measurement of economic growth, (dependent variable) with the trade openness (TOP), (import-export), and real investment (capital formation) as the independent variables. An autoregressive distributed lag (ARDL) model, more explicitly bounds test approach as introduced by Pesaran et al (2001) is used to test and examine the variables.

RGDPCt = f (It, Top,) or more explicitly stated as unrestricted error correction model (UECM) as below:

$$\Delta RGDPCt = \beta 0 + \beta 1 RGDPCt-1 + \beta 2 It-1 + \beta 3\ TOPt-1 + ut \quad \ldots\ldots 3.1$$

Where the RGDPC is the real Gross Domestic Product per capita, I is the real Investment inflow, TOP is the level of openness which is the ratio of total trade (export plus import) over real GDP and Δ is the first difference operator.

3.3.2 Estimation Technique

The empirical investigation involves three steps. The first step examines the Stationarity of the variables using unit root tests. The second step tests the presence of long-run relationships between the variables. The third step is to carry out causal relationships among the variables using Granger causality tests. The ARDL approach to co-integration developed by Pesaran et al. (2001) is used to depict the long-run relationship among the variables. The advantages of this approach over other traditional methods are well documented in the econometric literature. The ARDL bounds testing approach to co-integration is based on the following error-correction model

Test for Stationarity

In econometric analysis the Stationarity of variables is very important when studying the different time series behavioral patterns. There are three conditions to be satisfied for series to be Stationarity as shown below:

- the constant mean through time, thus

$(Xt) = \mu$…….....…….3.2

- The constant variance through time, thus

$(Xt) = [(Xt - \mu)] = \sigma 2$ …….....……..3.3

- the covariance which relay upon the number of periods between two values, thus

$(Xt\ ,Xt+k) = [(Xt - \mu)(Xt+k - \mu)] = Yk$…….....……3.4

As shown above, according to Gujarati (2003) variables that are non stationary could lead to spurious regression results. Furthermore, non stationary variables could lead to incorrect

conclusion thereby leading to incorrect policy formation. The problem of non Stationarity can be prevented by differencing the variables several times to obtain Stationarity

This approach examines the patterns and trends in the data. It also tests for the order of integration of the time series variables so as to obtain a meaningful regression analysis against spurious. This will be achieved by testing for Stationarity (unit root). There are several methods used such as the Augmented Dickey-Fuller (ADF) test (Dickey &Fuller, 1981), the Philips-Perron (PP) unit root test (Philips & Perron, 1988) and the Kwiatkowski-Phillips-Schmidt-Shin (KPSS) test (Kwiatkowski, Phillips, Schmidt & Shin, 1992). The ADF and PP test uses the same critical values. The test in this study uses the three methods namely the ADF test, the PP test and the KPSS test which will include both for intercept with and without trend. The tests are based on the first order auto-regressive [AR(1)] process as proposed by (Enders, 2004). The ADF test uses additional explanatory variables by lagging the left-hand side variable to approximate the autocorrelation as shown below: in the works of (Arif & Ahmad, 2012):

$$\Delta Yt = \delta yt-1 + \sum \delta i \; k \; i=1 \; .yt-1 + et \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 3.5$$

Where k denotes the number of lags for $\Delta yt-1$, which is large enough to include the existence of autocorrelation in et but small enough to save the degrees of freedom.

Vector Autoregressive (VAR) Modelling and Co-Integration Analysis

Recently, long run linear relationships among variables in the presence of short-run deviations from the long run equilibrium are checked, using co-integration test. In the face of non-stationary series with a unit root, first differencing appears to provide the appropriate solutions to ensuring series are weakly stationary. First differencing, however, does possess a major limitation in that it tends to ignore the long run properties of the data.

If two time series y_t and x_t are both integrated of order d (i.e. I (d)), then, in general, any linear combination of the two series will also be I (d); that is, the residuals obtained on regressing Y_t on x_t are I (d). If, however, there exists a vector b, such that the disturbance term from the regression ($et = y_t - bx_t$) is of a lower order of integration I (d-b), where

$b>0$, then Engle and Granger (1987) define y_t and x_t as cointegrated of order (d,b).

The procedure used for co-integration testing of the VAR follows the methodology developed and used by Johansen (1988, 1991), and Johansenand Juselius (1990).

For the examination of long- run relationship the bound cointegration test based on critical values taken from Pesaran (2001) will be used with the null and alternative hypotheses are as below:

Ho = $\beta 1 = \beta 2 = \beta 3 = 0$ (no long-run relationship)

H1 = $\beta 1 \neq \beta 2 \neq \beta 3 \neq 0$ (a long run relationship)

Granger Causality Test

The purpose of causality test in multivariate time series analysis is to identify which variable causes (precedes) another variable. This technique was proposed by Granger (1969) and refined by Sims (1972). Given two variables X and Y, X is said to Granger cause Y if lagged values of X predict Y well. If lagged values of X predict Y and, at the same time, lagged values of Y predict X, then there is a bi-directional causality between X and Y. In general, a time series X is said to Granger-cause another time series Y if it can be shown that the series X values provide statistically significant information about the future values of series Y; if not, X does not Granger-cause Y (Vebeek, 2003).

According to Granger (1988), the existence of cointegration between X and Y must be evaluated before performing a causality test. If a cointegrating relationship is identified, then causality must exist in at least one direction. Causality can be unidirectional, that is, it can run only from X to Y; in this study, for instance, the cointegration may be from private investment to public investment, or it may be from public investment to private investment. As suggested in the literature, there may be bi-directional causality, that is, all of the variables will cause each other. In the two-variable case, X and Y, the notation will be (X⇔Y). When causality runs from one variable to the other and, in turn, runs from that other variable to the other, then feedback effects are said to exist. If the innovation to Y and innovation to X are correlated, then it is said that there is direct causality. At the other extreme, there may be no causality at all; in this case, the variables are said to be independent.

3.4 Description of variables

Per capita gross domestic product (Y) is the dependent variable, while openness and gross fixed capital formation are the independent variables. The variables in the model are justified in investigating the relationship between trade openness, investment and economic growth in Ethiopia. GDP per capita growth (Y) measures the performance of the economy from low productivity towards high productivity, which can be related to their trade specialization. A positive sign is expected for this variable.

Trade openness (TROP) is captured by using trade share ratio (export / import) / GDP as a measure of openness. This approach calculates trade openness used by Osabbuohien (2007), Matadeen et al. (2011), Stensnes (2006) and Ahmad and Mohebbi(2012). There are other measures available for trade openness, but this measure captures qualitative and quantitative restrictions directly related with trade level to the rest of the world. According to theory openness is positively related to economic growth, hence it increases markets for new products by allowing market forces to allocate resources to productive sectors which leads to efficiency and makes use of scale of economies. A positive sign is expected for this variable.

Capital formation data is important in growth of Ethiopia in that investing in infrastructure can contribute significantly to both private and public sectors in potential sectors like Tourism, hotel and Agriculture just to mention a few. Investing in infrastructure adds value to economy and creates job opportunities by attracting more investment thereby entering into new emerging markets which leads to diversification in its export markets. A positive sign is expected for this variable as shown from various works earlier reviewed. (Adhikary, 2011)

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1. Economic policy and performance of investment trade openness and economic growth in Ethiopia

This section presents economic policy and trends of performance of investment, trade openness and economic growth in Ethiopia.

4.2. Economic Policy and Trends of Economic Growth

4.2.1. The Derge Regime (1974/75-1990/91)

The inappropriate economic policy and mismanagement, together with prolonged internal and external social and political unrest (such as the war with Somalia and drought) and high population growth are at least partially responsible for the poor performance of the economy and the erratic nature of growth (whenever it occurs) over this time period. The period can best be illustrative of acute economic failure. For example, real GDP exhibited growth of 2.7% on average (which is almost 27% lower than the growth in real GDP during the Imperial era), while the population grew at 2.5% per year. The rate of growth of population over the real GDP dropped the per capita real GDP below zero to 0.19, reflecting deterioration in the standard of living compared to the previous regime.

Disaggregation of the periods would yield greater insight into the dismal economic performance, as well as the irregular nature of growth. This irregularity of growth is strongly connected to the growth of agriculture, which, in turn, is vulnerable to the vagaries of nature. The more favorable the weather is, the greater the growth of agriculture and consequently the greater the growth of the economy (Alemayehu, 2001). For instance, the average growth rate over the period 1974/75–77/78 was 3.9%, while per capita growth was 1.5%.

The economy, on average, has increased to 4% growth over the period 1978/79 to 1982/83, a period characterized by relative stability and good weather conditions, while the per capita growth for the same period was 1.3 percent. Other periods ensued, including periods of severe drought (1983/84 and 1984/85) that decelerated growth by

6.9 percent and 8.7 percent, respectively. However, the growth rate increased, showing remarkable recovery from the previous years, and reached 7.8 percent during 1985/86 and 1987/88, only to fall to 1.3% during the next two years (1988 to 1989). The collapse of manufacturing (-8.3%) and construction (-14.7%) that was responsible for the sharp drop in the industry's added value to -8.3% chiefly accounted for the decline in GDP for the year 1982/83.

4.2.2.EPRDF (Mid-1991-to today)

The post-1991 period witnessed the economy's revival and increasing impetus to reverse the poor performance trend of the economy that characterized the previous regime. Under the auspices of the Bretton Woods Institutions (IMF and WB), the new regime embraced structural adjustment policies, and the country witnessed a shift in the economic system, allowing more room for the private sector to play a significant role in the economy.

As a result, overall economic performance has shown relative improvement in spite of fluctuations (due to recurrent drought, population pressure, war, and land degradation) over the period, and the country experienced broad-based growth across sectors. From

1991/92 to 2009/10, the economy and per capita income have registered an average annual growth of 4.9 and 2.04 percent, respectively. The growth in real GDP would have been expected to be higher if the country did not face frequent droughts and Eritrean aggression in 1998, the year of negative growth.

Between 1997/98 and 1998/99, real GDP decreased by 0.1 percent, primarily due to the severe drought and conflict with Eritrea, which affected agricultural production, thereby significantly lowering the share of agriculture in the GDP. However, real GDP has recovered since 1998/99 and registered a 4.95 percent increase over the preceding year.

In the past decade, Ethiopia has set to implement new economic growth policy called GTP The main macroeconomic policy objective of GTP I was achieving a rapid, sustainable and broad-based economic growth through creating conducive macroeconomic environment. Accordingly, the following major macroeconomic goals were set in GTPI Maintaining broad based and double digit economic growth within a stable macroeconomic environment, Increasing the share of

gross domestic saving (GDS) in GDP to 15 percent and Increasing the share of export in GDP to 22.5 percent.

The GTPI had set a goal to sustain the rapid growth performance registered during the last seven consecutive years before 2010/2011. Built on the remarkable growth achievements of the preceding seven years, real GDP growth averaged 10.1% per annum during the period of GTPI, a one percentage point shortfall from the base case scenario of 11 percent annual real GDP growth target for the plan period. The growth performance during the GTPI period was built on the fast and sustained growth achieved during the preceding 7 years. As a result, real GDP growth during the last 12 years averaged 10.8 percent per annum. This is more than double the SSA average of about 5 percent during the same period.

4.3. Economic Policy and Trends of Investment in Ethiopia

4.3.1. Dergue Regime (1974/75 - 1990/91)

Characteristic of A command economic system in which the state played a considerable role in all aspects of economic activity was the period 1974–1991. Throughout its ruling period, with the exception of the late 1980s, the military government (Derge) followed socialist policy, emphasizing the expansion of medium- and large-scale manufacturing owned by the state. In other words, the economy was guided by central planning, and economic policies were devised in such a way that the public sector was favored at the cost of the private sector (Berhanu, 2001).

The Derge regime froze the private sector by issuing nationalization proclamations at various periods. Soon after the revolution, the military government came to power and nationalized all private large- and medium-scale manufacturing enterprises owned by nationals and foreigners (MEDaC, 1999). With proclamation No. 26/1975, the government nationalized a large number of domestic and foreign producers, distributors, and service-providing establishments (Berhanu, 2001).

Furthermore, the government, through another proclamation (Proclamation No. 76/1975), allowed only the operation of individual businesses; if businesses wished to organize themselves, their membership was limited to five persons. To increase the freezing effect further, the government set the maximum ceiling for private-sector investment to Birr 500,000.00; it also

prohibited the issuance of licenses to investors for more than one line of business, and investors could not possess other jobs. The government levied progressive taxes on the income and profit of individual business that completely discouraged the participation of the private sector. However, the government made policy changes in the 1980s after an unsuccessful attempt to lead the country in a socialist direction. In light of this new perspective, the government raised the level of the capital ceiling and exempted the import duty on vital goods. The government is also issued a proclamation (proclamation No.235/1983) inviting the participation of foreign investors in joint ventures with the objective of bringing technology and technical skills in to the country.

The government also invoked the Ten-Year Perspective Plan from 1984/85 to 1993/94, which recognized the role of savings in improving the economy, although the government also relied on the public sector at this time. In addition, by decree, the government allowed domestic private investment participation (special decree No. 11 of 1989) in the form of joint-venture agreements, although the state retained the majority of the share.

In contrast to the preceding four decades of the Imperial period, private investment during the military government followed a poor trend. During the early period of the military government, from 1974 to 1979, private investment as a share of real GDP fell to 7.81%, whereas public investment as a share of real GDP was approximately 3.9%. From

1974 to 1990, private investment as a share of real GDP averaged 6.5 percent. The low rate of private-sector development in the period of the Derge was a result of the restrictive policies pursued by the state. However, due to policy reforms, private investment as a share of real GDP improved.

These policy reforms helped boost the share of private investment (11.1% of real GDP) in the later periods of the military government, particularly in 1988, which may be considered the peak of investment during the military period. In the last days of its political dominance, the Derge pursued a mixed economic development approach. Most of the restrictions imposed on both domestic and foreign investments were removed by Proclamation No. 17/1990. This last proclamation offered various privileges and incentives, namely, that both domestic and foreign

investors were exempted from income tax and custom duty; leased land was also given to those engaged in agricultural endeavors.

4.3.2EPRDF (Mid-1991-to today)

Since 1991, the country has witnessed a transition of the economic system from a socialist, planned economic system to a more market-oriented economic system, particularly in terms of macroeconomic policy. Unlike the military government, this made itself a crucial player in the economy, the Transitional Government of Ethiopia.

(TGE) attempted to reduce its role in the economy and promoted the active participation of the private sector through various economic reforms (Ethiopian Investment Commission, 2008).

The TGE introduced a private investment policy, the first in the country's history, under investment proclamation No. 15/1992. The stipulation made by the private investment policy includes, among others, entry and ownership requirements, investment incentives, labour laws, immigration rules, settlement of disputes, guarantees and protection. The proclamation was introduced to support, expand, and coordinate investment in the country. The objectives of the proclamation were to expand the domestic market, increase employment opportunities, strengthen private-sector investment, and encourage the use of domestic raw materials and the absorption of foreign production know-how.

The proclamation enabled the private sector to invest in most sectors, except in those areas reserved for the government such as defense industries, the production and supply of electricity, telecommunication and postal services, large-scale air and marine transport services and the import of petroleum and weaponry for the government.

Furthermore, the government reserved investments in the following areas for itself or in partnership with private investors. These additional areas of investment include investment in large-scale engineering and metallic industries, capital-intensive and technology-intensive investment, large-scale mining and energy production, large-scale pharmaceutical and fertilizer production and industries that supply strategic raw materials for chemical industries.

To overcome the shortcomings of the first proclamation, the government enacted a second investment proclamation in June 1996 (Investment Proclamation No. 37/1996).

The second investment proclamation guaranteed incentives for private investors who invest in priority sectors with an investment capital of less than Birr 250,000. This proclamation also lowered the capital requirements of foreign investors to USD 100,000 or its equivalent, provided that they reinvest profits or dividends drawn from the existing investment; service sectors, such as tourism, health and education, enjoyed duty-free exemptions as a result of the second investment proclamation.

Between the two proclamations (1991/92-1995/96), the share of private investment averaged 5.8% of real GDP, and public investment averaged 7.3% of real GDP. In particular, the former reached 7.5% of real GDP in 1993. To redefine domestic investors to include foreign nationals who were Ethiopian by birth and to allow investors to invest jointly with the government in defense industries and telecommunication services, the second proclamation (proclamation No. 37/1996) was amended in June 1998 by proclamation No. 116/1998. The proclamation also enabled the Federal Investment Board to grant, after securing approval from the Council of Ministers, additional incentives other than what is provided under the Investment Incentive Regulations.

Investment areas included under the additional incentive package include education, health, defense, telecommunication, and industry. The government has also legislated two proclamations (proclamation No 280/2002 and its re-enactment proclamation No. 373/2003) that provided more opportunity for private-sector participation and permitted the improvement of transparency and efficiency in service delivery. Because of the revised investment proclamation in 1996 and subsequent amendments, private-sector participation has increased. The share of private investment to real GDP reached an average of 13.96% for the period 1996/97-2009/10.

However, in recent times, especially during Ethiopian GTPI plan, Ethiopia has shown promising in investment activities. At the same time, the share of gross domestic investment in GDP increased from 22.3 percent in 2009/10 to 39.3 percent by 2014/15. This domestic investment ratio is believed to have made significant contribution to the rapid economic growth registered during the planning period. This very high investment rate is the result of both private and public investment spending. The role of private investment has been encouraging including that of the FDI.

4.4. Economic Policy and Trends of Foreign Trade in Ethiopia

4.4.1 Dergue Regime (1974/75 - 1990/91)

Both the imperial and military government pursued inward-looking development strategies that entailed import substitution as the center of trade policy. However, a comparison of the two regimes reveals that the imperial period's inward-looking strategy is much looser than that of the military regime. Both periods were characterized by prolonged overvaluation of domestic currency, high tariff rates, extensive foreign exchange control, non-tariff barriers and heavy taxation on exports. Despite the fact that both regimes pursued an import substitution strategy and exports were considered secondary, the regimes made efforts to promote and diversify the country's exports, as shown in the three different five-year development plans of the Imperial Government of Ethiopia (IGE) and in the Derge's Ten Year Perspective Plan.

During the Derg regime (1974 to 1990), the exports and imports as a share of GDP averaged approximately 11 and 12.7 percent, respectively. The value of goods and services exported and imported increased at an average annual rate 7.1 and 8.7 percent, for the period 1974 to 1990.

4.4.2EPRDF (Mid-1991-to today)

Ethiopia abandoned the socialist economic system by the end of 1991, and after 1992/93, the Transitional Government of Ethiopia (TGE) adopted a policy of trade liberalization and devised new foreign trade policies. The reforms in trade regime and deregulation were motivated by the belief that free markets facilitate the improvement and expansion of exports, enhance the efficiency and competitiveness of the domestic economy, and result in strong and sustainable growth. To achieve these objectives, such steps as exchange-rate liberalization, simplified licensing and exchange retention procedures, and modified tariff structures, among others, have been taken by the government.

As a result of the above reforms, average exports as a share of GDP between 1991/92 to 2009/10 reached 11.1, while that of imports reached 23.4 percent. The average values of exports and imports for the same period were 24.2 and 26.9 percent, respectively, which is mainly the result of the outward-looking policy pursued by the current government.

Especially, During the GTP I implementation period, trade balance has been widening owing to the weak performance of exports aggravated by the fall in international commodity prices. The bulk of Ethiopia's merchandize exports are primary agricultural commodities. The trade balance has widened from 6.3 billion USD in 2009/10 to 13.4 billion USD in 2014/15. Thus, during the same period, import coverage of export earnings has declined from 24.2 percent in 2009/10 to 18.9 percent in 2014/15. This indicates that import coverage of export earnings has been on a declining trend on average during the last five years.

In general, the assessment of the trend in external trade over the two regimes indicates that there is a shift in policy perspectives from an inward-looking trade policy to an outward-oriented policy.

Trade openness remained stable over the majority of the pre-reform period (1970 to 1979), mainly due to restrictive trade policy. From the period 1984 to 1991, trade openness continually fell, which can be attributed to recurrent drought and civil war. However, after the reform period (1991/92), trade openness has increased with the exception of the period during 1998, which was saw a reduction due to the Ethio-Eritrean conflict. The sharp increase in openness is due to the policy reform following the stabilization policy of the WB and IMF, as well as the liberalization of the trade regime.

Ethiopia abandoned the socialist economic system by the end of 1991, and after 1992/93, the Transitional Government of Ethiopia (TGE) adopted a policy of trade liberalization and devised new foreign trade policies. The reforms in trade regime and deregulation were motivated by the belief that free markets facilitate the improvement and expansion of exports, enhance the efficiency and competitiveness of the domestic economy, and result in strong and sustainable growth. To achieve these objectives, such steps as exchange-rate liberalization, simplified licensing and exchange retention procedures, and modified tariff structures, among others, have been taken by the government.

4.5. Econometric model results

In empirical analysis, pre-estimation diagnostic tests are required. One of the pre-estimation diagnostic tests is a test of multicollinearity. When the explanatory variables are very highly correlated (they are "multicollinear") then data cannot tell, with the desired precision, if the

movements in the dependent variable was due to movements in one or the other explanatory variables. This means that the point estimates might fluctuate wildly over subsamples and it is often the case that individual coefficients are insignificant even though the overall fit may be high and the joint significance of the coefficients is also high. However, the estimators can still be consistent and asymptotically normally distributed (Greene, 2003).

There are several classical tests for diagnosing collinearity problems to augment the results from the simple pair-wise correlation matrix, but this study focuses on only one the variance inflation factor (VIF) - perhaps the simplest and most commonly used test.

Even though, the VIF test by itself is not free from limitations, as a rule of thumb the VIF must be less than 5. Using the VIF and its reciprocal- the Tolerance, it is found that VIF is less than 5 which shows absence of multicolinarity

4.5.1 Unit Root Tests

The unit root test is a common practice in macro-level data analysis to accommodate non Stationarity. If this behaviour of macro-variables is left uncorrected, it would lead to the problem of spurious regression when there is a need to model relationships among variables. As explained in the methodology, formal testing for Stationarity and the order of integration of each variable are primarily undertaken using different methods (mostlyADF and Phillips-Perron)

This test is a test to determine the existence of unit root in the data and clarify the stationary status of the data. The existence of stationary in a time series data indicate that the series have constant variance, constant mean and constant covariance implies that there is an existence of a meaningful economic relationship in the regression model.

H0: y=0 (yt is a unit root/non-stationarity)

H1: Y=0 (yt is stationarity) so, The unit root hypothesis can be rejected if the t-test statistics is less than the critical value.

Results of the ADF test are reported in Table 4.1 the parentheses of the results are the lag length determined by Schwarz criterion for the ADF. At 5% level of significance, the ADF tests reveal that Real GDP is stationary at level so, we reject the null hypothesis and accept alternative

hypothesis. At 5% level of significance, Trade openness and Investment is also stationary at level of 5%.

To generalize the results of each unit root test results, the researcher has detailed the results of the tests for all the three variables namely, real GDP, Investment and trade openness.

Table 4.1: Unit root test result for Real GDP

	Test statistic	1% critical value	5% critical value	10%critical value
Z(t)	2.923	-3.662	-2.964	-2.614

Mackinnon approximate P-Value forZ(t)=1.0000

D.real GDP	Coef.	Std.Err.	T	P>|t|	(95% conf.	Interval
Real GDP L1.	0.1634819	0.559228	2.92	0.006	0.0500652	0.2768987
-constant	-7326.769	24958.44	-0.29	0.771	-57994.84	43291.3

Source: Researcher own computation from stata 13

From the above data we can overwhelmingly reject the null hypothesis of a unit root at all common significance levels. From the regression output, the estimated β of 0.16 implies thatρ= (1−0.16) =0.84.Experiments with fewer or more lags in the augmented regression yield the same conclusion.

Table 4.2: Unit root test result for Trade openness

	Test statistic	1% critical value	5% critical value	10%critical value
Z(t)	2.610	-3.662	-2.964	-2.614

Mackinnon approximate P-Value forZ(t)=0.9991

D.TROP	Coef.	Std.Err.	T	P>|t|	(95% conf.	Interval
Trade opennnes L1.	0.0739071	0.0283195	2.61	0.013	0.0164724	0.1313418
-constant	859437.7	721533.1	1.19	0.241	-603899.2	2322775

Source: Researcher own computation from stata 13

Here, we can simply reject the null hypothesis of a unit root at all common significance levels. From the regression output, the estimated β of 0.074 implies thatρ= (1−0.074) =0.926.Experiments with fewer or more lags in the augmented regression yield the same conclusion

Table 4.3: Unit root test result for investment

	Test statistic	1% critical value	5% critical value	10%critical value
Z(t)	2.075	-3.662	-2.964	-2.614

Mackinnon approximate P-Value forZ(t)=0.9988

D.INV	Coef.	Std.Err.	T	P>|t|	(95% conf.	Interval
Investment L1.	0.1126623	0.542918	2.08	0.045	0.025534	0.2227712
-constant	4674.664	9381.605	0.50	0.621	-14352.11	23701.44

Source: Researcher own computation from stata 13

From the test result, we can simply reject the null hypothesis of a unit root at all common significance levels. From the regression output, the estimated β of 0.113 implies thatρ= (1−0.113) =0.887.Experiments with fewer or more lags in the augmented regression yield the same conclusion

Table 4.4: Results for ADF for stationarity test

Variables	Test statistic	1% critical value	5% critical value	10% critical value
Real GDP	2.923	-3.662	-2.964	-2.614
Trade openness	2.610	-3.662	-2.964	-2.614
Investment	2.075	-3.662	-2.964	-2.614

Source: Researcher own computation from stata 13

4.5.2. Co-Integration Test Result

Lag Order Selection for Endogenous Variables

The Johansen co-integration test results could be highly sensitive to the number of lags included for the endogenous variables in the estimation of the VAR, which necessitates the determination of an optimal lag order prior to the test of co-integration. The optimal lag order is determined with the sequential modified Likelihood Ratio test statistics [LR], the Final Prediction Error [FPE], the Akaiki Information Criterion [AIC], the Schwarz Information Criterion [SIC] and the Hannan-Quinn Information Criterion [HQ].

The Johansen-Juselius test is used to test for cointegration long run relationships among the variables that are I(1). Based on 5% level of significance, both the trace and maximum eigenvalue statistics reveals that real GDP,trade openness and investment has at least three co integrating relationship. Depend on the results, as we can see from table 4.5, trace statistic value which is 99.9732, 32.9817 and 11.9130 is greater than 5% critical value which is 29.68, 15.41 and 3.76 respectively. So whenever trace statistic value exceeds 5 % critical value we always reject null hypothesis and accept the alternative hypothesis.

Table 4.5: Results of tests of cointegration

Maximum rank	Parms	LL	Eigen value	Terrace statistic	5% critical value
0	12	-1491.1481	.	99.9732	29.68
1	17	-1457.6208	0.83672	32.9187	15.413.76
2	20	-1447.118	0.43318	11.9130	
3	21	-1441.1614	0.27528		

Source: Researcher own computation from stata 13

From the above result the researcher can conclude that, there exist three (2) co-integrating equations at 5% level of significance. This is because the likelihood ratio is greater than critical values at 5%. This shows that there is long run relationship between trade openness, investment and economic growth in Ethiopia. The result indicates that, in the long run; the dependent variables can be efficiently predicted using the specified independent variables.

4.5.3 Granger Causality test Results

The granger causality test was used to estimate the causal relationship between the variables. If there is Co-integration between the series then the vector error correction method can be utilized. The chi-square of the Wald statistics of the differenced explanatory variables could indicate the short term causal effects, while the long causal relationship is determined through the significance of the t-tests of the lagged error-correction term.

Table 4.6: Results of tests of granger causality test

Equation	Excluded	Chi 2	Df	prob>chi2
Real GDP	Trade openness	14.216	2	0.001
Real GDP	Investment	0.91074	2	0.634
Real GDP	All	24.181	4	0.000
Trade openness	Real GDP	28.752	2	0.000
Trade openness	Investment	24.061	2	0.000
Trade openness	All	40.145	4	0.955
Investment	Real GDP	0.09154	2	0.000
Investment	Trade openness	24.919	2	0.000
Investment	All	30.088	4	0.000

From The result of the above table the researcher draws the following hypothesis tests.

H0: Lagged TROP (Trade openness) variables does not cause granger Real GDP

H1: Lagged TROP (Trade openness) variables does cause granger Real GDP

From the above table, one can easily find that the probability value is 0.001 which is less than 5% so, the null hypothesis is rejected and alternative hypothesis is accepted meaning Lagged

Trade openness does not cause granger real GDP. However, lagged Investment does cause granger RGDP since the probability value (63%) is greater than 5%.

4.6. Post-Estimation Diagnostics

In the study, different post-estimation diagnostic tests were performed to guarantee that the residuals from the model are Gaussian that the assumptions are not violated and the estimation results and inferences are trustworthy. The diagnostic test results could also be used as indicators of the validity of employing impulse-response functions and variance decomposition analyses.

Residual Vector Serial Correlation LM Test

Table 4.7 shows that there is no evidence that reveals the presence of autocorrelation at the first through the third lags. The large p-values imply that the chi-squared statistics at all lags are not large enough to help reject the null of no autocorrelation at any of the usual critical values. Thus, the study could not find any evidence of autocorrelation problem in the residuals.

Residual Vector Normality Test

Normality is checked mainly by using the Jarque-Bera test. The result (in table 4.7) shows that the residual vector of the model is found to be jointly normal only at the 10% level. However, since normality is an asymptotic or large sample property, it may be expected that the residual normality could asymptotically be improved if the sample size could be increased. Unfortunately, the sample size could not be increased because of investment data. This may suggest that there could be small sample size problem in the data that has probably reduced the power of this test.

Residual Vector Heteroskedasticity Test

Only the levels and square terms (and no cross terms) of the residuals are included in performing this test, owing to the small sample in the data. The result in table 4.7 suggests that there is no enough evidence to help reject the null of no heteroskedasticity.

Therefore, the residuals of the model are found to be homoskedastic. This, together with the results of the other pre and post estimation diagnostic tests, suggests the validity and robustness of the estimated results.

Table 4.7: Diagnostic Test Results

Test	Statistic		P-value
Residual Vector Serial Correlation LM	lags	Chi-sq	
	1	29.40	0.7005
	2	34.12	0.6063
	3	51.03	0.5098
Residual Vector Normality (Jarque-Bera	Joint	41.36	0.09
Residual Vector Heteroskedasticity		52.88	0.00

Source: Researcher own computation from stata 13

4.7. Impulse Response

Impulse response functions could tell us how the real GDP at any point in time may respond to a one standard deviation innovation (impulse) generated from any of the variables earlier times and how that effect may be multiplied (lasts for long or is transitory). But it should be noted that the impulse response results based on cholesky's impulse response analyses are sensitive to the ordering of the variables and the lag length (see for example Lutkepohl, 1990). Thus to account of this problem, the results in this study are based on the generalized impulse response functions (GIRFs) based on the works of Pesaran and shin (1998).

4.8. Correlation analysis

Methods of correlation and regression can be used in order to analyze the extent and the nature of relationships between different variables. Correlation analysis is used to understand the nature of relationships between two individual variables. To check if there is relationship between the variables, the researcher adopted Pearson correlation analysis for the variables.

Table 4.8: Result of Pearson correlation coefficient

Correlations				
		RealGDP	Tradeopenness	investment
RealGDP	Pearson Correlation	1	.871**	.885**
	Sig. (2-tailed)		.000	.000
	N	39	39	39
Tradeopenness	Pearson Correlation	.871**	1	.995**
	Sig. (2-tailed)	.000		.000
	N	39	39	39
Investment	Pearson Correlation	.885**	.995**	1
	Sig. (2-tailed)	.000	.000	
	N	39	39	39
**. Correlation is significant at the 0.01 level (2-tailed).				

Source: Researcher own computation from stata 13

From the result, the researcher found that there is perfect positive relationship between investment, trade openness and economic growth in Ethiopia. Trade openness and investment has value of0.871 and 0.885 respectively which indicated a very strong association with economic growth.

4.9. Econometric Analysis

4.9.1 Determination of Optimal Lag Length for Endogenous Variables

The Johansen co-integration test result is very sensitive to the number of lags included for the endogenous variables in the estimation of the VAR. This necessitates the determination of an optimal lag order prior to the test of co-integration. This indicates the importance of determining optimum lag order before the test of co-integration and vector error correction methods. The optimal lag order is determined with the sequential modified Likelihood Ratio test statistics [LR], the Final Prediction Error [FPE], the Akaiki Information Criterion [AIC], the Hannan Quinn Information Criterion [HQ]) and the Schwarz Information Criterion [SC].As indicated below in table 4.9 Out of five information criteria the maximum appropriate lag order of four was chosen in determining the conditional VAR model indicated by the "*" in the output.

Table 4.9: Optimal lag Order selection criteria

Lag	Loglikelihood	LR	FPE	AIC	AIC HQ	SC
0	-420.111		1.9e+09	24.1778	24.2238	24.3111
1	-414.268	11.687	1.4e+09	23.901	23.9624	24.0788
2	-402.672	23.192*	7.7e+08	23.2955	23.3722	23.5177*
3	-401.344	2.6555	7.6e+08	23.2768	23.3688	23.5434
4	-399.533	3.6207	7.2e+08*	23.2305*	23.3379*	23.5416

Note: * indicates lag order selected by the criterion

Source: Researcher own computation from stata 13

4.9.2 The Johansen Co-integration Test Result

We are concerned about the concept of co-integration because if the variables are not cointegration, we construct only the short run VAR model while we are also interested in knowing the long run relationship. Two variables will be co-integrated if they have long run relationships between them. In VAR models the test for co-integration is essential because if there is no cointegration relationship between the variables under consideration then there is no point in estimating VEC model. The guide line is when the trace statistics is more than 5% critical value there is long run relationships among variables.

Table 4.10: The Johansen Co-integration Test Result

Maximum Rank	Eigen Value	Value Trace Statistics	(5%) Critical Value
0		99.9732	29.68
1	0.83672	32.9187	15.41
2	0.43318	11.9130	3.76
3	0.27528		

Source: Researcher own computation from stata 13

From the given table above, at least one Co- Integrating equation exists. The null hypothesis of no co-integration among the variable is rejected since the trace statistics of 99.9732 is greater than the 5% critical value of 29.68. From this, one can infer the existence of co-integrating relationship between GDP at current price, investment and trade openness for the Ethiopian economy.

4.9.3 Vector Error Correction Model (VECM)

In the previous analysis, it was found that the data has one co-integrating relationship based on the Johansen co-integration test. Hence, VECM is performed by choosing the optimal lag that is chosen based on the information criterion seen in the previous section and by using the result of the Johansen co-integration test. The VECM consists of two parts: the matrix of long-run cointegrating coefficients that is used to derive the long-run co-integrating relationship, and the short-run coefficients which is for the short-run analysis.

Long-run Relationship

The target of this study is to investigate the impact of trade openness and investment on economic growth rate; the impact of real GDP and investment on trade openness and the impact of real GDP and trade openness on investment. Johansen co-integration test indicates the presence of these one co-integrating equations.

Table 4.11: The Estimated Long- Run Model for LRGDP

Variables	LTROP	LINV	C
Coefficients	-.0092666	4.922821	9.874325
t-statistics	-1.50	2.03	9.674466

Source: Researcher own computation from stata 13

R-squared0.95417, Adj-R-squared=0.93

LRGDPt=9.874325+4.922821LINVt -0.0092666LTROPt +εt

The adjusted R2 has approximately a value of 0.9 which implies that the variations in real gross domestic product are well explained by changes in investment (INV) and Trade openness (TROP). From the estimation result shown in the above table, LRGDP can be explained by investment and trade openness. The result shows that trade openness exert insignificant negative effect on economic growth rate in the long run whereas investment exerts significant positive effect on economic growth rate in the long run

The result showed that 1percent increase in growth trade openness decreases economic growth rate by 0.09% assuming other variables are constant which indicated the effect is almost insignificant.

As can be seen from the above result investment has a positive impact on economic growth rate of the country over the period of 1980 – 2018. The result showed that 1 percent increase in investment increases economic growth rate by 4.92 percent assuming other variables constant. This result is in line with Philip's curve that exist a positive relationship between investment and economic growth. The result is the consistent with the empirical findings of Mallik and Chowdhury (2001) showing a positive long-run relationship between investments and real GDP.

Table 4.12: The Estimated Long- Run Model for LINV (Investment)

Variables	LTROP	LRGDB	C
Coefficients	0.0023009	0.2515015	1.97
t-statistics	-0.93	-0.67	105.8601

Source: Researcher own computation from stata 13

R-squared0.9561, Adj-R-squared=0.94

LRGDPt=1.97+0.251LRGDPt +0.0023LTROPt +εt

The adjusted R2 has approximately a value of 0.94 which implies that the variations in investments are well explained by changes in real GDP (RGDP) and Trade openness (TROP). From the estimation result shown in the above table, investment can be explained by RGDP and trade openness. The result shows that trade openness exert insignificant positive effect on investment in the long run whereas investment exerts significant positive effect on economic growth rate in the long run

The result showed that 1percent increase in growth trade openness increases economic growth rate by 0.02% assuming other variables are constant which indicated the effect is almost insignificant.

As can be seen from the above result real GDP has a positive impact on investment of the country over the period of 1980 – 2018. The result showed that 1 percent increase in real GDP increases investment by 0.25percent assuming other variables constant.

Table 4.13: The Estimated Long- Run Model for TROP (trade openness)

Variables	LINV	LRGDB	C
Coefficients	3.282039	10.646	3.24
t-statistics	-2.77	2.41	17.07867

Source: Researcher own computation from stata 13

R-squared0.9941, Adj-R-squared=0.97

LRTROPt=3.24+10.65LRGDPt +3.28LONVt +εt

The adjusted R2 has approximately a value of 0.97 which implies that the variations in trade openness are well explained by changes in real GDP (RGDP) and investment (INV). From the estimation result shown in the above table, trade openness can be explained by RGDP and investment. The result shows that real GDP exert significant positive effect on trade openness in the long run and also investment exerts significant positive effect on trade openness in the long run

The result showed that 1percent increase in GDP increases trade openness by 10.64% assuming other variables are constant which indicated the effect is very significant.

As can be seen from the above result investment has a positive impact on trade openness of the country over the period of 1980 – 2018. The result showed that 1 percent increase in real investment increases trade openness by 2.8 percent assuming other variables constant.

CHAPTER FIVE

CONCLUSIONS AND RECOMNDATONS

5.1. Conclusions

The study investigates the relationship between investment, trade openness and economic growth in Ethiopia using annual time series data for a period 1980 to 2018. In investigating the relationship between investment, trade openness and economic growth in the Ethiopian economy; trade openness and investment are used as explanatory variables while GDP per capita is the dependent variable in VEC model. Based on stationary test results using ADF test and PP test showed some variables were stationary in levels, some in first difference and one variable in second difference.

Co-integration test estimated and confirmed that a unique long run relationship exists among the variables. Furthermore, the VEC model estimated the Granger causality results showed that there is no related causality between variables, suggesting no long run causal relationship between investment, trade openness and economic growth. But, the study has also revealed a positive long run relationship between trade openness and investment in Ethiopia.

The study found that there is no related causal relationship between trade openness to GDP growth. The lagged response in investment and trade openness variables reveals a positive and significant effect on changes in GDP growth of Ethiopia. The results are in line with the theoretical literature of neoclassical theory of linkage between variables and similar to findings of Yamada (1998), Kohpaiboon(2003) and Adhikary (2011). Kohpaiboon(2003) states that FDI (in relation to exchange rate) has greater impact on growth under export-led trade regime in relation to an import substitution regime. Yamada (1998) confirms that adopting export oriented policies that promote labour-intensive industries and investments that create job opportunities for the poor people also leads to economic growth for the country. Furthermore, the variance decomposition analyzed that the GDP growth rate volatility accounts for the majority portion caused by its own variation followed by labour, real exchange rate, capital formation, and lastly trade openness.

The study also examined whether there is nexuses between investment, trade openness and economic growth in Ethiopia during the period 1970-2018. Co-integration and Vector Error Correction approaches have been applied for the identification of nexuses between investment, trade openness and economic growth both in the short run and in the long run.

The study found that, there exists a positive complementary long run relationship among trade openness and investment. An increase in investment causes an increase in openness and the vice versa also holds true. Therefore trade openness indirectly impacts growth through increasing investment opportunities.

5.2 Recommendations

Based on the finding the following recommendations are stated. These recommendations build on the reforms and efforts that have been taken over the past decades but also attempt to offer new approaches to addressing old problems

The empirical results of the study have revealed a long run positive relation between investment and economic growth. Thus an important implication for policy is that investment (i.e. Private and public gross capital formation) is one of the major determinants of economic growth in Ethiopia. For the objective of accelerating economic growth; The Ethiopian Government is required to promote and encourage both domestic and foreign direct investment. The investment policy should be more transparent, attractive and competitive. This leads to a positive impact on investment in terms of volume and diversification. Therefore; the Ethiopian authority must place emphasis on the growth of investment in efforts to enhance and stimulate economic growth in Ethiopia.

Investment in any form results in productive outcomes. Economic growth is caused by growth in physical and human capital and also factors such as domestic saving rate, technology and institutional change. Most economists feel that sustained high growth is dependent on sustained technological and institutional growth; to speed up the growth policy measures to facilitate the above variables require paving the way for expanded investment.

The government in Ethiopia should promote the types of FDI that offer a good match with Ethiopia's need and opportunities, perhaps more export-oriented and labour-intensive FDI. This means developing tools to measure FDI flows and assess their impact. This could be an essential tool to guide policy making and seek an adequate match between the country's needs and what different types of foreign investors can contribute with. Likewise, specific policies for areas where "leapfrogging" opportunities exist are needed as well as providing incentives where necessary (UNCTAD, 2011).

According to the findings of this study increase in trade openness leads to an increased investment therefore Cooperation with international community plays a critical role in accelerating trade. This is not only a requirement to strengthen trade relations and capital flows but also a safe choice for Ethiopia to grow through enlarged openness to trade opportunities.

5.3 Area for Further Research

This paper analyzes the nexuses between investment trade openness and economic growth. The study focuses on the interrelationships among these three variables.

A critical assessment of the literature still needs to be made along indications above, as well as are several empirical explorations of the relationship between international trade and economic growth arising from the assessment. Economic theory generally supports the conclusion that trade has a positive effect on economic growth. Theorists disagree as to whether increases in the growth rate of a country's economy after a single episode of trade lasts forever. Among the unresolved issues in such researches is the appropriate quantitative measurement of "openness" and the variables used in estimation.

In spite of the promising results of this study, the researcher contend that this paper provides only a promising step towards developing a more comprehensive empirical research which could perhaps include more variables, data and empirical techniques typical for robust results on this issue.

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Appendices: Appendix 1Unit root test result for Real GDP

```
. tsset Year, yearly
        time variable:  Year, 1980 to 2018
                delta:  1 year

. dfuller RealGDP, regress lags(0)

Dickey-Fuller test for unit root                    Number of obs   =        38
```

	Test Statistic	Interpolated Dickey-Fuller: 1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	2.923	-3.662	-2.964	-2.614

MacKinnon approximate p-value for Z(t) = 1.0000

D.RealGDP	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
RealGDP L1.	.1634819	.0559228	2.92	0.006	.0500652	.2768987
_cons	-7326.769	24958.44	-0.29	0.771	-57944.84	43291.3

Appendix 2: Unit root test result for Trade openness

```
. dfuller TradeOpenness, regress lags(0)

Dickey-Fuller test for unit root                    Number of obs   =        38
```

	Test Statistic	Interpolated Dickey-Fuller: 1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	2.610	-3.662	-2.964	-2.614

MacKinnon approximate p-value for Z(t) = 0.9991

D. TradeOpenness	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
TradeOpenness L1.	.0739071	.0283195	2.61	0.013	.0164724	.1313418
_cons	859437.7	721533.1	1.19	0.241	-603899.2	2322775

Appendix 3 Unit root test result for investment

```
. dfuller Investment, regress lags(0)

Dickey-Fuller test for unit root                    Number of obs   =        38
```

	Test Statistic	Interpolated Dickey-Fuller: 1% Critical Value	5% Critical Value	10% Critical Value
Z(t)	2.075	-3.662	-2.964	-2.614

MacKinnon approximate p-value for Z(t) = 0.9988

D.Investment	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
Investment L1.	.1126623	.0542918	2.08	0.045	.0025534	.2227712
_cons	4674.664	9381.605	0.50	0.621	-14352.11	23701.44

Appendix 4 : Results of tests of cointegration

```
. tsset Year, yearly
       time variable:  Year, 1980 to 2018
               delta:  1 year

. vecrank TradeOpenness RealGDP Investment, trend(constant)

                    Johansen tests for cointegration
Trend: constant                                      Number of obs =      37
Sample:  1982 - 2018                                        Lags =       2
```

maximum rank	parms	LL	eigenvalue	trace statistic	5% critical value
0	12	-1491.1481	.	99.9732	29.68
1	17	-1457.6208	0.83672	32.9187	15.41
2	20	-1447.118	0.43318	11.9130	3.76
3	21	-1441.1614	0.27528		

Appendix 5 Results of tests of granger causality test

. vargranger

Granger causality Wald tests

Equation	Excluded	chi2	df	Prob > chi2
RealGDP	TradeOpenness	14.216	2	0.001
RealGDP	Investment	.91074	2	0.634
RealGDP	ALL	24.181	4	0.000
TradeOpenness	RealGDP	28.752	2	0.000
TradeOpenness	Investment	24.061	2	0.000
TradeOpenness	ALL	40.145	4	0.000
Investment	RealGDP	.09154	2	0.955
Investment	TradeOpenness	24.919	2	0.000
Investment	ALL	30.088	4	0.000