ST.MARY'S UNIVERSITY

SCHOOL OF GRAGUATE STUDIES

THE CONTRIBUTION OF CONSTRUCTION INDUSTRY TO THE ECONOMIC GROWTH OF ETHIOPIA

BY

ESAYAS DEMISSIE GUDETA

JUNE, 2020
ADDISABEBA,ETHIOPIA

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A THESIS SUBMITTED TO ST.MARY'S UNIVERSITY, SCHOOL OF GRADUATE STUDIES IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF DEVELOPMENTAL ECONOMICS

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APPROVED BY BOARD OF EXAMINERS

As a member of the Board of Examiners of the Master Thesis open defense examination, we testify that we have read and evaluated the thesis prepared by Esayas Demissie under the title "**THE CONTRIBUTION OF CONSTRUCTION INDUSTRY TO THE ECONOMIC GROWTH OF ETHIOPIA**". We recommended that this thesis to be accepted as fulfilling the thesis requirementfor Degree of Master of Arts in Development Economics.

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DECLARATION

I, the undersigned, declared that this thesis is my original work and has not been presented for a first degree or master's degree in any other university, and that all source of materials used for this thesis have been duly acknowledged.

Name: Esayas Demissie Gudeta

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Date: _____

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, 2020

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ACRONYMS AND ABBREVIATIONS

ASYB	African statistical year book
CI	Construction industry
EEA	Ethiopian economy association
GDP	Gross Domestic Product
GNP	Gross National Product
GERD	Grand Ethiopian Renaissance Dam
GFCF	Gross Fixed Capital Formation
MOFED	Ministry of finance and economic development
NGCF	National Gross Capital Formation
NBE	National bank of Ethiopia
OLS	Ordinary Least Squares
RM	Repair and Maintenancel
UK	United Kingdom
UNEP	United Nations Environment Program

ABSTRACT

Construction industry plays a vital role in any developing country because most developing countries are considerably dependent on the growth and development of their physical infrastructures and the linkage of the construction industry to both economic and social sectors is very significant.. The main purpose of this study is to examine the contribution of Construction industry on economic growth in Ethiopia. Data on relevant variables such as RGDP, Construction Expenditures, trade openness, and FDI were acquired from secondary sources that constitute a time series of 19years period (from 2000 to 2018). The collected data was analyzed using STATA 13.The Ordinary least square regression analysis (OLS) revealedthat Construction Expenditures andtradeopennesshave a positive correlation with economic growth while FDI has no significant effect onrealGDP. Finally the researcher recommends to the government to invest more on construction projects to maintain the sustainable economic growth of the country. Furhermore; the researcher also recomonds to the government to promot international trade to enable to play its role on economic growth.

Keywords:*EconomicGrowth,ConstructionIndustry,RealGDP,OLSmodel*

CHAPTER ONE

INTRODUCTION

1.1. Background of the Study

The construction industry is frequently used as a tool by government to manage the local/national economy. For example, when it is recession and the number of unemployment is high, government uses the construction sector to increase the public expenditure by (AgungWibowo,2009).Therefore the detailed way in which the construction sector interacts with the national/local economy and wealth of people involved is not well understood. It needs methods to investigate the detail interaction between the construction industry and the national/local economy.

Construction industry plays a vital role in any developing country. This is mainly because developing countries are considerably dependent on the growth and development of their physical infrastructures and because the linkage of the construction industry to both economic and social sectors is very significant.According to United Nations Environment Program, (UNEP, 1996)explanations, construction industry makes significant contributions to the socio-economic development process of a country. Its importance emanates largely from the direct and indirect impact it has on all economic activities. It contributes to the national output and stimulates the growth of other sectors through a complex system of linkages. It is noted that about one-tenth of the global economy is dedicated to constructing and operating homes and offices. UNEP further observes that the industry consumes one-sixth to one half of the world's wood, minerals, water and energy.

The World Bank as quoted in (Dozzi, 1993)also argues that the importance of the construction industry stems from its strong linkages with other sectors of the economy(Teshager, 2016).The construction sector is imagined to play a powerful role in economic growth, in addition to producing structures that add to productivity and quality of life. Since construction is labor-intensive, when the sector is working at full capacity, large sections of the nation's work force are active.According to Lopes et al. (2011), performed econometric analysis to test whether

construction industry contribute to economic growth and concluded that construction activity plays a vital role in economic growth.(Bilal, 2014) requested in his research that the minimum necessary and sufficient conditions for economic growth and found that the construction industry in broad sense, it is seen to comprise the wide range of entities and activitiesthatdirectly or indirectly contribute to the actualization of built infrastructure(Abubakar et al., 2018).

Incidentally, the construction industry used for sector classification by government and other agencies (such as the government of the United Kingdom and the United Nations) in determining the relationship between the sectors and the economies of countries and regions over the world (Myers, 2008). The construction outputs can be classified as a major component of investment and part of fixed capital. Both are essential factors for a continuous economic growth. Products of construction require a long period of gestation and are expected to supply services for a period of time. Investments in construction assume major importance since any expansion in the economy requires infrastructure investment as a precondition for potential economic growth (Ive and Gruneberg, 2000; Hillebrandt 2000).

The state of the construction industry will affect most common measures of a national economy, such as GDP. It will affect the availability of capital, the decisions a government makes and even the social health of the country. The construction industry also has significance interaction with other economics sector as multiplier effects through its backward and forward linkages. The construction industry is frequently used as a tool by government to manage the local/national economy. For example, when it is recession and the number of unemployment is high, government uses the construction sector to increase the public expenditure (Ball and Wood, 1994). The detailed way in which the construction sector interacts with the national/local economy is not well understood. It needs methods to investigate the detail interaction between the construction industry and the national/local economy.

In any sense of it, the construction industry has been reported to be a very significant contributor to national economies considering its capacity for employment and its support for all other economic entities of the countries.

World Bank Report (2009) suggested the need for developing countries to concentrate efforts in diversifying their economies from mono product and natural resources based, towards more

sustainable human resources that can also create jobs for the fast population. To achieve this, human and infrastructure developments must be enhanced for growth and development of small scale industries and internal micro economic development.

Construction sector is one of the top sectors used in measuring the National Gross Capital Formation (NGCF) and the GDP of any country and its effect on every other sectors, makes it a significant front for sustainable development (Mosaku et al., 2006). The industry's size, the nature of its operation, the job creation potentials and its presence in every developmental activity have made construction an attractive area for experimentation in enhancing the effectiveness of governance and cooperative works towards economic growth. Therefore, the overview of the contribution of construction sector to economic growth in Ethiopia is vital.

The construction industry in Ethiopia has been developing tremendously since 2001. Recent studies by (Zewdu&Aregaw, 2015) indicated that the GDP contribution of the industry has been raised to 5.6% there for this paper examines the contribution of construction sector output (growth) to that of the Ethiopian GDP.Thus, conducting a study on the contribution of construction to economic growth has great significance for proper policy directions.

1.2. Statement of the Problem

Construction is a major industry throughout the world accounting for a sizeable proportion of most countries' Gross Domestic Product (GDP) and Gross National Product (GNP).The importance of the construction sector is not only related to its size but also to its role in economic growth. Economic growth is currently an issue of global concern as most economies are finding it difficult to create the necessary employment opportunities and achieve meaningful growth.

Different researches have been carried out on the contribution of construction industry on economic growh in different countries of the world. Like The Impact of Construction Sector on Palestinian Economy(El-namrouty, 2012).Role of construction sector in economic growth: empirical evidence from Nigeria (Oladinrin, T. O., Ogunsemi, D. R. and Aje & Department, 2012).An impact analysis of construction sector on economic growth and household income in south Africa(Mosenogi, 2014).The contribution of the construction industry to economic development in Libya(AMEL, 2013). Interaction between the economic growth and the

construction industry(Bilal, 2014). Analysis on the Relationship between GDP and Construction Based on the Data of UK and China(Qifa, 2013).

However, Ethiopia like other Least Developed Countries is the most vulnerable country find herself in the worst situation.when the researcher find on internet, regarding this issue, could not get the articles and journals directly related research topics carried out in Ethiopia. In the country, construction industry is already affecting economic growth and not to attract the attention of researcher. Therefore due to the absence of empirical studies in Ethiopia, the researcher interested to put his own contribution on the contribution of construction sector on economic development and this indicate that there is a knowledge gap on this area. Therefore, this study addresses to sort out the contribution of construction sector on economic growth in Ethiopia and tried to provide a comprehensive more recent evidence for the contribution of construction industry on Ethiopian economic growth during the period of 2000-2018 to disprove the main theories related to the issue or to conform it.

1.3. Study Objectives

1.3.1. General objective

The general objective of thestudyisto examine the contribution of Construction industry oneconomic growth in Ethiopia.

1.3.2. Specific Objectives

Having this general objective, the following specific objectives will guide the study**:**

- To describe the trend of construction industry and economic growth.
- To investigate the impact ofconstruction industry on economic growth.
- To identify the effect of macroeconomic variable on economic growth in the study area.

1.4. Research Questions

In order to answer the research objective, the study formulate the following specific research questions

- What is the trend of construction industry in the study area?
- To what extent the construction industry contribute to the economic growth of Ethiopia?
- To what extent macroeconomic variable affects economic growth?

1.5. Significance of the Study

The significance of the study can be considered as a major driver for growth since the focus is on finding solution for poor economic performance. This study mainly assesses direct, indirect and induced contribution of construction sector to the economic growth in Ethiopia. As indicated above, the study will also simulate the direct, indirect and induced contribution of the construction sector to the economic growth. The study will also be important for Policy makers to design appropriate policies and also the study can serve as a reference to subsequent research works.

1.6. Scope of the Study

This study is concerned only with the contribution of construction industry on economic growth of Ethiopia from 2000 to 2018.The variables considered to find the contribution of construction sector to the economic growth of Ethiopia measured by RGDP are: FDI,trade openness and construction expenditure.

1.7. Limitation of the Study

The first limitation was the shortage of data and information regarding the Ethiopian construction industry and other economic variables and also the researcher could not get the articles and journals directly related research topics on the internet regarding this issue carried out in Ethiopia. There were some variations on data observed while collecting informations from different sources with in the same year. However; the researcher has used his own way to select the realiable data from which he considered the source is reliable.

CHAPTER TWO

LITERATURE REVIEW

2.1. Introduction

The literature review section of this study cover the overview of the theoretical and empirical literature on Economic growth and Construction Industry.The theoretical and empirical studies reviewed in the areas of Economic growth,ConstructionIndustry trend and economic growth and impact of Construction Industry on Economic growth. Furthermore, it also covers the study variables and summary of empirical works conducted in the area together with the knowledge gap of the area.

2.2. Theoretical Review

2.2.1. Definition and Concept of Economic Growth

Economic growth is synonym of production of goods and services, creation of jobs and wealth. It is conventionally meah the percentage of increase in gross domestic product (GDP). Therefore, GDP shows the total market value or monetary value of all finished goods and services produced in a country borders in a specified time period and calculated on annual basis. Measurement of economic growth uses national income accounting. Economic growth typically refers to growth of potential output. It is used as indicator of economic health of a country and also gauges a country‟s standard of living (Song,2006). It is clear that economic growth is not a solution for the country's problems, but it facilitates the implementation of public policies that complement the shortcomings of growth. In short the growth is a necessary condition but not sufficient to ensure social welfare (Mamoudou, 2011).

Muhedin (2016), on the other hand, stated economic development or economic growth as an improvement in the material well-being of the poor; a decline in agricultures share of national output; increase in the output share of industry and services; an increase in the education and skills of the labor force; and technical advances originating within the country. The economic

achievements lead to the improvement of the standard of life, adequate conditions of medical care, improvement of the educational system and a better redistribution of incomes.

2.2.2. Theories on Economic Growth

Different models of economic growth stress alternative causes of economic growth. The principal theories of economic growth include:

2.2.2.1. Mercantilism

Popular at the start of the industrial revolution, Mercantilism isn't really a theory of economic growth but argued that a country could be made better off by seeking to accumulate gold and increasing exports(https://www.economicshelp.org,2020)

2.2.2.2. Classical model

Developed by Adam Smith in Wealth of Nations (1776), Smith argued there are several factors which enable increased economic growth

- Role of markets in determining supply and demand
- The productivity of labour. Smith argued income per capita was determined by "the state of the skill, dexterity, and judgment with which labour is applied in any nation
- Role of trade in enabling greater specialisation.
- Increasing returns to scale e.g. specialisation we see in modern factories and the economies of scale of increased production

Ricardo and Malthus developed the classical model. This model assumed technological change was constant and increasing inputs could lead to diminishing returns. This led to the gloomy predictions of Malthus that the population would grow faster than the world's capacity to feed itself. Malthus under predicted the capacity of technological improvements to increase food yields.

2.2.2.3. Neo-Classical model of Solow/Swan

The neo-classical theory of economic growth suggests that increasing capital or labour leads to diminishing returns. Therefore, increasing capital has only a temporary and limited impact on increasing the economic growth. As capital increases, the economy maintains its steadystate rate of economic growth.

To increase the rate of economic growth in the Solow/Swan model requires:

- An increase in proportion of GDP that is invested however, this is limited as higher proportion of investment leads to diminishing returns and convergence on the steady-state of growth
- Technological progress which increases productivity of capital/labour

It suggests poor countries who invest more should see their economic growth converge with richer countries.

2.2.2.4. HarrodDomar model Savings Ratio and Investment

The HarrodDomar model is a type of neo classical model. It states growth rate depends on a function of the savings rate.

Some growth theories place a large emphasis on increasing domestic savings. Savings provide the necessary funds to finance investment. It is this investment which creates further growth. This has been an important factor behind the economic growth in Asia.

However, it depends on how efficient the investment is. If savings is too high it leads to lower growth because people cannot afford to consume.

2.2.2.5. New economic growth theories

Endogenous Growth Theory

Endogenous growth models, developed by Paul Romer and Robert Lucas placed greater emphasis on the concept of human capital. How workers with greater knowledge, education and training can help to increase rates of technological advancement.

They place greater importance on the need for governments to actively encourage technological innovation. They argue in the free market classical view, firms may have no incentive to invest in new technologies because they will struggle to benefit in competitive markets. The model

- Places emphasis on increasing both capital and labour productivity.
- States that increasing labour productivity does not have diminishing returns, but, may have increasing returns
- They argue that increasing capital does not necessarily lead to diminishing returns as Solow predicts. They say it is more complicated; it depends on the type of capital investment.
- Increased importance of spillover benefits from a knowledge-based economy.
- Emphasis is placed on free-markets, reducing regulation and subsidies. The argument is that we need to keep economies open to the forces of change.

Joseph Schumpeter argued that an inherent feature of capitalism was the 'creative destruction' – allowing inefficient firms to fail was essential for allowing resources to flow to more efficient channels.

Unified growth theory

Developed by OdedGalor, unified growth theory tries to combine many different elements of economic growth

- Economic stagnation that characterized most of human history until the eighteenth century

- First industrial revolution and the beginning of economic growth
- The role of human capital formation in economic growth
- Explaining divergence in economic growth across countries.

2.2.3. Construction Industry and economic growth in Developing Economies

The process of growth and the process of development, although they can work apart in the long run, are dependent on each other for completion. For the case of a developing economy, the focus on the production of capital stock is crucial to improve the process of economic growth, as the process of economic growth and its effects are primarily reflected in the improved lifestyle of the population. The contribution of the construction industry in the growth of a developing economy is reflected in the definition of economic growth provided by Mankiw(2010:191). The author defines economic growth as the increase in gross domestic product (GDP) measured as total output or everyone's total income.

The construction industry contributes to economic growth from the demand side and in the traditional Keynesian economy sustainable short-run economic growth is dependent on the increased demand (Wigren and Wilhelmsson, 2009). In comparison with the other industries that contribute to the economic growth of developing country, the industry of construction is more labor-intensive, while the developing countries are mostly labor-abundant (GiangvePheng, 2011).

Possible measures of the role of the industry in the economic growth include:

As confirmed in World Bank (2012), the critical role of construction infrastructure development is certainly provides a sizable contribution to fixed capital formation.

Construction is relatively labor- intensive in using a large number of workers in most developing countries. The industry employs 20-30% of the labor force in developing countries (UNIDO, 2006).

Construction industry makes significant contributions to the socio-economic development process of a country. Its importance emanates largely from the direct and indirect impact it has on all economic activities. It contributes to the national output and stimulates the growth of other

sectors through a complex system of linkages. It is noted that about one-tenth of the global economy is dedicated to constructing and operating homes and offices (UNEP, 1996).

2.2.4. The contribution of the construction industry to the economy

The formation of the fixed capital investment is a vital concern for the state of the nation as it represents investment in the future of the economy of the country. Fixed investment usually consists of houses and infrastructures in public and private sectors, as well as the business investment in plant and machinery of all industries.

Investment in theconstruction sector can be defined as construction-related to the Gross Fixed Capital Formation (GFCF). GFCF is an expenditure on fixed assets (buildings, vehicles, machineries, etc) either for replacing or adding to the stock of fixed assets. These fixed assets are repeatedly or continuously used in the production process (Ganesan, 2000). The construction sector constitutes about 40%-60% of GFCF in most developing countries. The proportion of investment that goes to entirely new construction is likely to be higher than that which goes to repair and maintenance (Ganesan, 2000). In developed countries, the construction industry accounts for approximately one third of the total investment in physical assets in the economy. This is about the same as the investment in plant and machinery (Ashworth, 2002). The construction investment can be an important public policy tool that is often used by central and local government to accelerate development and create employment.

2.2.5. Role of Construction industry in Ethiopia economy

The construction industry has important contributions to the Ethiopian economy, as demonstrated by its share in the GDP. For instance, the share of the sector in the total GDP averaged at about 5.2 percent in the period 2002/03- 2006/07 according to(EEA, 2008). The sector has registered relatively higher growth as compared to the growth of GDP during this period. Over this period, there has been increased investment on the development and expansion of various infrastructure projects like roads, airports and residential and non-residential housing units.

During the past decade robust public and private expenditure on infrastructure and other construction works has served as a catalyst for Ethiopia's rapid economic development. The country has consistently invested more than 30% of GDP into Gross Fixed Capital Formation (GFCF) expenditure since 2010 and as a result, Ethiopia has emerged as one of the fastest-growing economies in the world. The market value of the construction sector is currently estimated at more than US$7bn. According to the 2017 edition of African Economic Outlook, construction activities in Ethiopia accounted for 15.9% of GDP at current prices during the 2015/16 fiscal year.

2.2.6. Impact of construction Industry on Economic growth

Economic growth models forintanceHarrod-Domarhave shown the importance of investment in determining economic growth. More recently, both the Solow and endogenous growth models continue to attribute an important role to capital formationitfollows that likely that construction has an impact in short-run growth. To test the impact of the construction sector on long-run growth, it is necessary to get more data on labour and capital statistics covering the periods under review. (Dlamini, 2014) indicated that there has been an evidence for the impact of construction activity to the economic growth. As an investment sector, construction has the potential to impact positively on short-run growth. Construction can thus be regarded as a major component of investment programmes, particularly for developing economies.

2.3. Empirical Literatures

In connection with the empirical literature numerous researchers have been conducted to examine the contribution of construction industry to Economic growth, panel data approach and time series data in both developed and developing economies using a wide variety of explanatory variables have been studied

For instance; Anaman & Osei-amponsah (2007)conducted a study to analyse the causality links between the growth in the construction industry and the growth in the macro-economy of Ghana, measured by the gross domestic product (GDP) to ascertain whether the construction industry can be used to lead the entire economy on a growth path. They analysed a time series data based on a simple Granger causality test data from 1968 to 2004. They showed that growth in the construction industry Granger-caused growth in GDP, with a three-year lag. The study result revealed that the construction industry needs to be considered as one of the major drivers of economic growth in Ghana.

On the other hand Oladmin (2012), investigated the relationship between the construction sector and aggregate economy. Using a time series data from 1990 - 2009 on construction output and Gross Domestic Product (GDP) were extracted from the United Nation Statistic Division. The authors used econometric techniques and Granger causality test to analyze the significance of construction linkage with the aggregate economy. They found out that construction output is Granger caused by GDP, while the construction output also granger causes the GDP. Both GDP and construction output lead each other by one year. They concluded that the Nigerian construction sector is very important because of its capacity to lead the economy of Nigeria (Oladinrin, 2012).

Erol (2015) also performed an investigation on economic growth in Turkey on the Role of Construction Sector in Economic Growth. They concluded unlike the widespread belief that the construction plays a crucial role in Turkey's economic growth, construction industry is not a driver of GDP growth but a follower of fluctuations in the macroeconomy.However, our sub-sample analysis revealed that the causal relationship between economic growth and construction investments varies noticeably across the sub-periods in the national economy. They found that expansion in construction sector caused GDP growth over the last five years (Erol, 2015). The

low interest rate environment with the help of radical changes in urban legislation and city building boosted up the construction industry, which resulted in economic growth in subperiod 2010-2014. They conclude that the temporary effect of construction industry growth on the GDP growth in the sub-period 2010-2014 is not justified for the overall sample period. Provided that much of the cyclicality in construction investment stems from the sector's sensitivity to interest rates, they also found that there exists a bidirectional relationship between construction activities and real interest rates both for the entire sample period and for the sub-period 2002-2014. Furthermore, construction activities have short-lived effects on the economic growth and thus cannot offer permanent solutions for the economic troubles in Turkey.

Construction industry contributes to employment, household income and economic growth(Mosenogi, 2014). Activities in such sector shows that increased productivity in the construction industry will result in increased economic growth. Further increase or activities in this industry will absorb more of semi-skilled and unskilled labours more compared to highly skilled labourer within the sector.

Qifa(2013) conducted a study to investigate the relationship of real growth between construction and national economy in the UK and China, the study found out that the value and growth rate of construction and GDP are highly related, and the situation in China is similar to UK, which is dependent on the nature of construction and its high investment multiplier. However, in China Construction and economy grow faster, and their correlation coefficient is higher than which in UK. As indicated in the study, the difference of the results might be due to the policy differences in the two cuontries on construction and developments.

Construction's role in economic growth is a significant in both developing and developed countries(Isa, 2013). Nigeria's economic growth over the study period was high and the contribution of construction sector, along agriculture and manufacturing has been on a steady raise, and construction sector played an increasingly important role in the nation's drive for diversified economy that can lead to true sustainability. Apart from the industry's social-economic potentials, its employment generation capabilities and the multi-sectoral dimensions made it an area that a nation with vision can look into for sustainable development.

Furhermore; Wibowo,(2009) also argued that construction industry provides a very important contribution to the national/local economy through its job generating ability for unskilled, semi-skilled and skilled labor. The construction process needs inputs from other industries and production factors (labor, land and capital). This could generate considerable employment through multiplier effects.

The findings of Vandana Bhavsar (2018) also indicated that the new construction sub sector has greater impact on economic growth than that of repair and maintenance sub-sector in India. The author alos tried to test a time series data for the period 1970–2011. The findings ratified an assumption that in the upward growthtrend in developing countries, the structure of the construction industry tendsto conform that of the general economy. Based on the findings, the author recommended to policy implications for policy makers to boost employment and enhance the productivity of the industry, which could help the government to efficiently make use of local resources in the development and maintenance of structures in the country

(Dlamini, 2014) on the otherhand made a time series statistical analysis of construction output data for South Africa and the UK. From his preliminary analysis of the study revealed that there is not an obvious link between construction investment and economic growth which is incontrary with the fiindings of scholars like: Anaman&oseiAmponash (2007), (Oladinrin, 2012).and (Erol, 2015)

The performance of construction sector is affected by some independent variables, such as, investment, foreign aid and other variable (El-namrouty, 2012).Performance of the construction sector affected GDP growth rate and the share of construction sector value added in Palestine GDP during the study period. Statistical analysis has been performed and proved the vital role of gross investment to the economy, investment has a positive significant correlation with the growth rate of GDP and construction value added for the Palestine economy and the case study area (Gaza Strip). The finding indicated that investment in the construction sector would be a major generating of income and jobs for skilled, semiskilled and unskilled labour force (El-namrouty, 2012).

(Naseem, 2011)discussed that the impact of foreign direct investment on Growth (GDP) of South Asian Association of Regional Cooperation (SAARC) countries. This relationship is tested by applying multiple regression models. The change in GDP is taken as dependent variable while FDI and inflation were considered as independent variables. The data used for this is ranging from year 2001 to 2010 of SAARC Countries. The result shows that there is a positive and significant relationship between GDP and FDI while an insignificant relationship between GDP and inflation.

According to Malefane & Odhiambo(2018), by using four proxies of trade openness;thus each proxy addressing a different aspect of trade openness in South Africa. The first proxy of trade openness was derived from the ratio of exports plus imports to gross domestic product (GDP). The second proxy was the ratio of exports to GDP, while the third proxy was the ratio of imports to GDP and The last proxy were an index of trade openness, which accounts for the country size and geography. Based on the long run empirical results, this study found that trade openness has a positive and significant impact on economic growth when the ratio of total trade to GDP is used as a proxy, but not when the three other proxies are employed. However, inthe short run, when the first three proxies of openness are used, the study found trade openness to have a positive impact on economic growth.

The Construction activities affect nearly every aspect of the economy and that the industry is vital to the continued growth of the economy(Oladinrin, 2012).In order for construction to ably perform this role, there is a need to provide information on its economic value and its place in the overall economy of a country . The author attempted to investigate the relationship between the construction sector and aggregate economy. Time series data from 1990-2009 on construction output and Gross Domestic Product (GDP) used for the study were extracted from the United Nation Statistic Division. The paper used econometric techniques like unit root test, cointegration test as well as Granger causality test to analyze the significance of construction linkage with the aggregate economy. The result indicated that construction output is Granger caused by GDP, while the construction output also granger causes the GDP. Both GDP and construction output lead each other by one year. The study concluded that the Nigerian construction sector is very important because of its capacity to lead the economy of Nigeria.

2.4. Conceptual Framework

According to Upton (2001), a conceptual framework can be defined as a set of broad ideas and principles taken from relevant fields of enquiry and used to structure a successive study. Therefore, a conceptual framework is a research tool intended to assist a researcher to develop awareness and understanding of the situation under examination and to communicate with a study (Upton, 2001). Hence, a conceptual framework is used to outline possible courses of action or to present a preferred approach to an idea or thought that developed based on the literature reviewed in respective to study undertaken.

- So, the conceptual frameworks for the study identify, Real GDP as dependent variable whereasConstructionExpenditure,Trade openness, and foreign direct investment as independent variables.The above-mentioned independent variables directly contribute to the economic growth and their intention the dependent variables, as to how the way to address these factors leads to the effect on Construction expenditure at study will undertake. This more illustrated through the figure below.

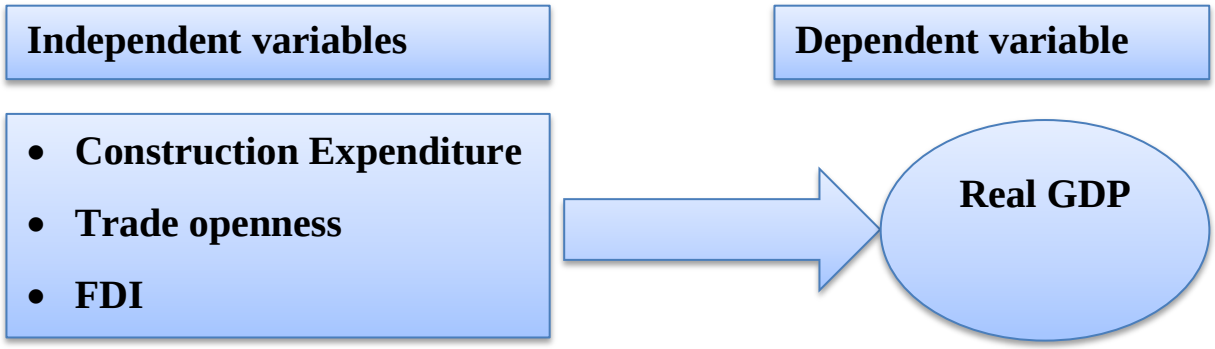

Figure 2- 1: Conceptual framework of the Study

CHAPTER THREE

RESEARCH METHODOLOGY

3.1. Introduction

The preceding chapter discussed about both theoretical and empirical studies and it tried to give a brief summary of the chapter and the Knowledge gap identified by the researcher which is intended to be addressed in this study.

The purpose of this chapter is to discuss the methods adopted throughout the study to accomplish the research objectives. The chapter is organized as follows: The first section presents the research design, the second part covers the research approach adopted to examine the contribution of construction industry to economic growth, while the next two sections are about study population and sample and sampling technique. Method of data collection and method of data analysis are presented in the fourth and fifth section respectively. Furthermore, the next two sections state about model specification and description of variables..

3.2. Research design

A research design is a plan, structure and strategy of investigation so conceived as to obtain answers to research questions or problems. The plan is the complete scheme or program of the research. It includes an outline of what the investigator will do from writing the hypotheses and their operational implications to the final analysis of data (Kumar, 2011) and also research designs are plans and the procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis (Creswell, 2009)

As per (Kothari, 2004) explanatory research design examines the cause and effect relationships between dependent and independent variables. Therefore, since this study was designed to examine the impact of Construction Industry on Economic growth of Ethiopia.

Taking RGDP as a dependent and Trade openness, Construction expenditure and forein direct investment as an independent variable, hence; it is an explanatory research design.

3.3. Research approaches

As stated in (Creswell, 2009) in terms of research study there are three familiar types of research approaches to business and social science researches namely: quantitative, qualitative and mixed research approaches.

A good research approaches is which yields maximal information and provides an opportunity for considering many different aspects of a problem is considered most appropriate and efficient research approaches in respect of many research problems. Thus, the question of good research approaches is related to the purpose or objective of the research problem and also with the nature of the problem to be studied(Kothari, 2004).

Therefore, taking the research problem and objective as stated in the previous sections as well as the quantitative nature of the research data i.e. RGDP,CE,FDI and TO collected through document survey along with the philosophy of the different research approaches, quantitative research approach is preferred and thought as appropriate over the others for this study

3.4. Method of Data Analysis

To achieve objective of the study, the study mainly concentrated on quantitative analysis. Hence, the researcher used econometric model to examine the contribution of Construction Industry to Economic growth of Ethiopia and Ordinary Least Square (OLS) method applyingSTATA 13 econometric software package for the study was employed. According to (Brooks, 2008)regression is concerned with describing and evaluating the relationship between a given variable (usually called the dependent variable) and one or more other variables (usually known as the independent variables). Thus, the researcher adopted time series data regression model to examine the the contribution of Construction Industry to Economic growth of Ethiopia.

The regressed time series data output was analyzed by using descriptive statistics (Mean values, maximum, minimum and standard deviations); correlations and multiple linear regression analysis were used to analyze the general trends of the data obtained from relevant data source

(WB). Correlation matrix was used to examine the relationship between the dependent variable and independent/explanatory variables.

In the analysis of the descriptive statistics, the mean, standard deviation, maximum and minimum values will be used to analyze the trends of the data.

In addition, diagnostic tests have been managed in order to check the validity of the model based on the assumption of the Linear Regression Model. Specifically, the assumption tests that have been managed include Heteroskedasticity Test and test for Multicollinearity.

3.5.Model Specification

According to (Brooks, 2008)it is very easy to generalize the simple model to one with k regressors (independent variables). In this respect, the study examined the Contribution of Construction Industry to Economic growth of Ethiopia by employing a multiple regression model which has the following general form;

$$Y_i = \alpha + \beta_i x_i + \cdots + \beta_k x_k + \varepsilon_i, i = (1, 2, \ldots, k).$$

Where;Y = the dependent variable

α = constant value

β_i = coefficient of independent variables

X_i = independent variables

ε = error term

3.6. Descriptions of Variables

There are dependent and independent variable which will be addressed in the study Economic Growth will be considered as a dependent variable with a measure of RGDP. While Construction Expeniture,Trade openness and Foreign direct investment (FDI) will be the independent variable .The dependent and independent variables are detailed as follows:

1. Real Gross Domestic Product (RGDP): The monetary value of all the finished goods and servicesProduced within a country's borders in a specific time.
2. Public Expenditure on Construction (CE): The actual expenditure on the construction as investmentin a Specific time.
3. Trade openness (TO): Is an indicator of the relative importance of international trade in the Economy of a country.
4. Foreign direct investment (FDI): Is an investment made by a company or individual in one Country in business interests in another country.

3.7. Data Types and Sources

All relevant secondary data were collected from World Bank(2019)andAfrican Statistical Yearbook (2019).The data were collected from 2000-2018 nineteen years of time seriesrefer to documentation, organization's reports and reviewing previous studies, searching on Websites such as published and unpublished materials, and other available sources for the simplicity of the research and as to properly organize the study.

3.8. Econometric model

3.8.1. Multicollinearity test

When there is high correlation between two or more predictor variables by using variance inflation factor (VIF), or a high degree of correlation amongst the explanatory variables.Its consequences will be it may be difficult to separate out the effects of the individual regressors and the standard errors may be overestimated and t-values depressed.

Since multi-collinearity is a data problem, not a misspecification problem,It is possible quantifies the severity of multicollinearty in an ordinary least squares (OLS) regression analysis.

3.8.2. Heteroskedasticity test

Heteroskedasticity of the residuals is evaluated by using Breusch-Pagan Test. It tests the null hypothesis of homoscedasticity against the alternative hypothesis of heteroskedasticity.It shows that the variance of the error term is not constant.The consequence will be the least squares results are no longer efficient and Ttests and F tests results may be misleading.

CHAPTER FOUR

RESULTS AND DISCUSSIONS

4.1 Introduction

The review of the literature revealed that the construction industry plays a significant role in strengthening the economy of a country. To have empirical evidence of the effect of the construction industry on GDP, it was important to conduct a statistical regression analysis on expenditure on the construction industry and GDP.

In this chapter, the results of the analysis conducted on the selected time-series data are presented. The chapter details not only the empirical results but also their relationship with the findings reported in previous studies as well as their limitations and scope.

4.2 Descriptive Statistics

In this section, the study presents a summary the descriptive statistics of the dependent and independent variables for three independent variables and a single dependent variable with there trend analysis from year 2000 to 2018.

Variables	N	Minimum	Maximum	Mean	Std. Deviation
RGDP (USD)	19	13,074,915,712.00	62,291,386,041.00	30,967,645,203.42	16,076,647,035.20
Construction expenditure (Million Birr)	19	2,641.00	452,978.00	73,219.26	124,888.89
Trade openness	19	31.1	55	42.521	7.3049
FDI (USD)	19	108,537,544.00	4,142,937,496.00	1,139,627,799.84	1,370,636,851.40

Table 4- 1: Mean and standard deviation of variables

Source: STATA output

As shown in table 4-1,the average real GDP of the Construction sector is found to be 30,967,645,203.42 whereas 13,074,915,712.00 and 62,291,386,041.00 are the minimum and maximum RGDP in USD respectuively.

The maximum, minimum and mean expenditure in the construction sector was 73,219.26,2,641.00 and 452,978.00

Million birr respectivelty during the study period. From this analysis one can understand that the expenditure in the construction sector during the study period was more remarkable.

The international trade was open for import and export sector to the extent 55% and the average openness of the international trade was found to be 42.5% during the study period.

The Maximum and the minimum FDI during the study period was found to be 4,142,937,496.00 and 108,537,544.00 respectively and the average was 1,139,627,799.84 USD. From this fact, the role of foreign direct investment in the economic growth of the country was more significant.

4.2.2 Trend analysis of Real GDP

As shown figure 4.1belowEconomic growth of Ethiopiashowsa downward trend in 2003 but it shows a rapid growth from 2004 to 2018. Economic growth of Ethiopian was an upward trend which means the economic growth of Ethiopian increase at increasing rate from 2004 to 2018.

Generally the GDP of Ethiopia becomes increase at increasing rate till to 2018 except in 2003.

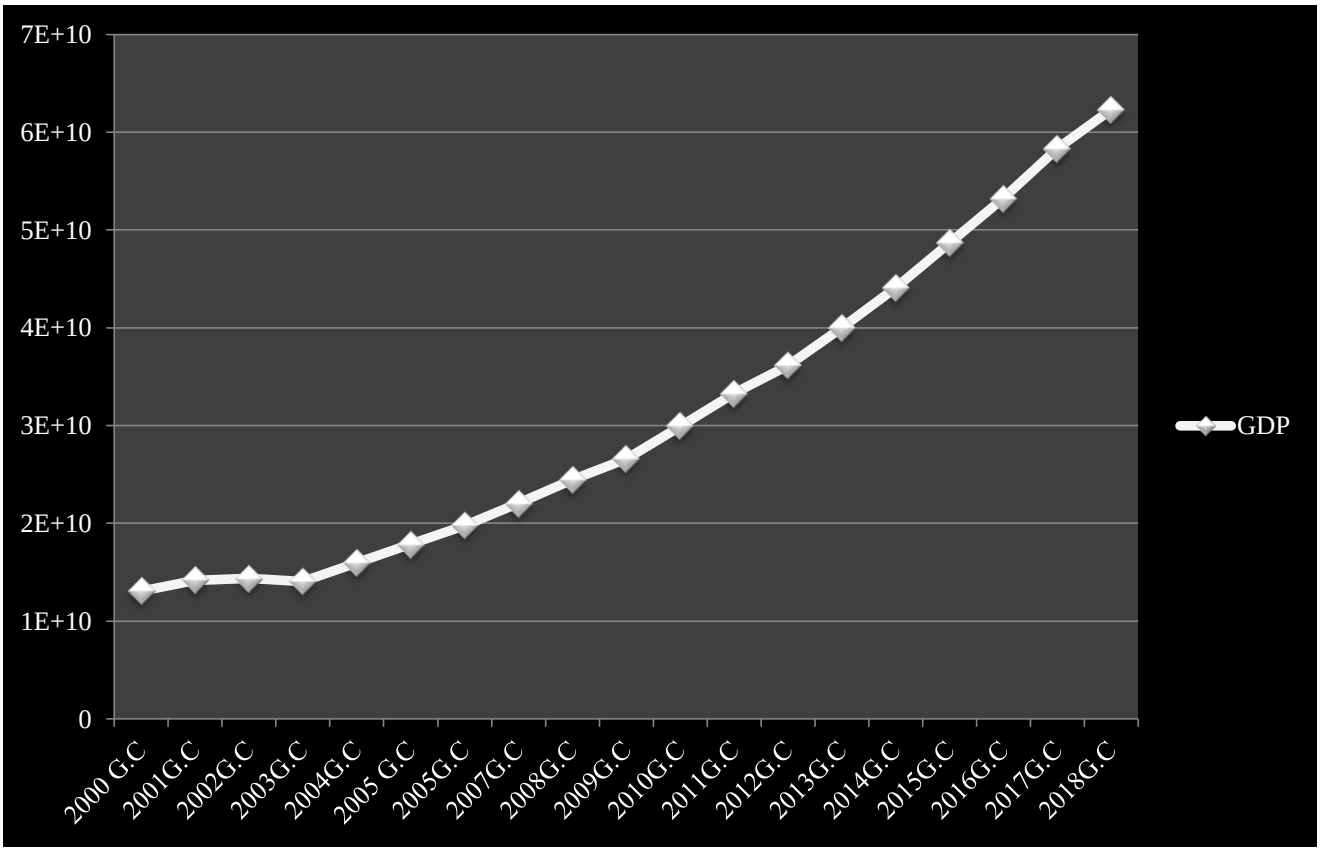

Figure 4- 1: Components of Real GDP

Source: Own Computation from World Bank

4.2.3 Trend analysis of construction expenditure

As shown in figure 4.2 below the construction investment increases at a decreasing rate between 2000-2012, but between 2012 and 2018 these investment increases at an increasing rate.

The construction expenditure has dropped during 2010 compared with 2009 and the researcher strongly argued that this fall was mainly due to the government attention during the time was given to election than developmental activities like construction.

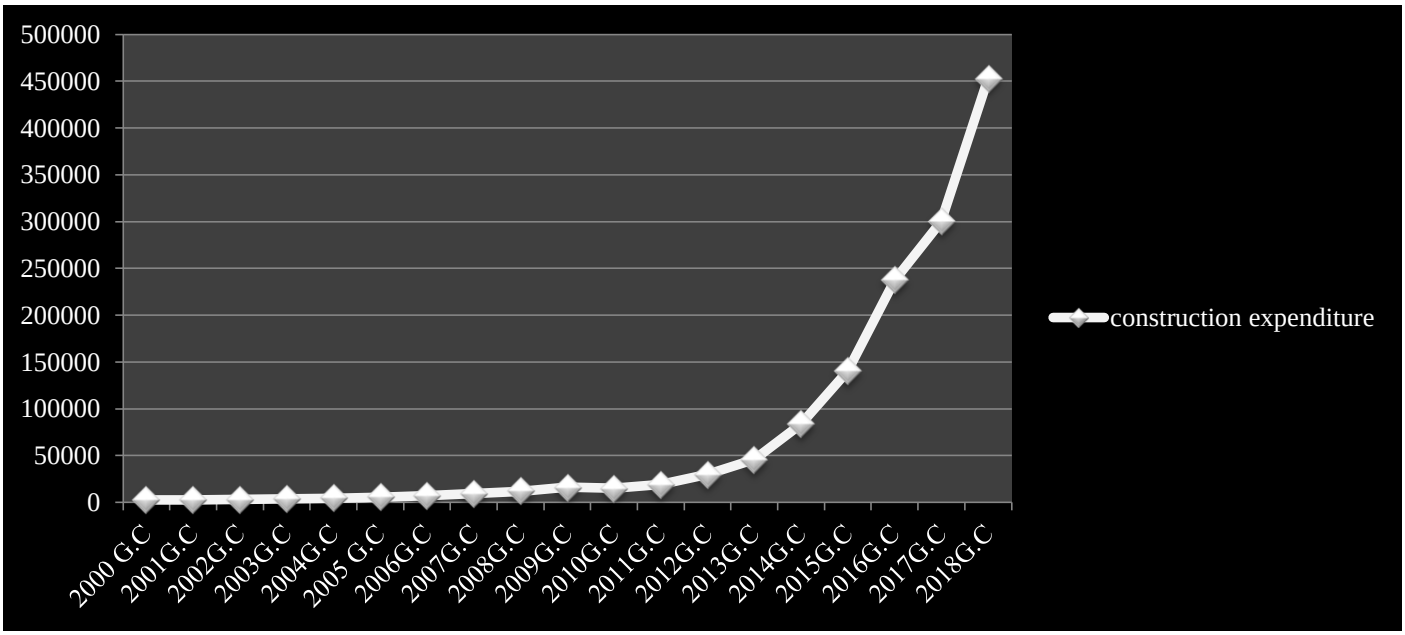

Figure 4- 2: Computation of construction expenditure

Source: Own Computation from African Statistical Yearbook

4.2.4 Trend analysis of foreign direct investment

As shown figure 4.4 below the trend of FDI indicates that up and down from 2000 to 2012 and unfortunately from 2013 to 2016 increases at increasing rate and decreased at a higher rate after 2016.

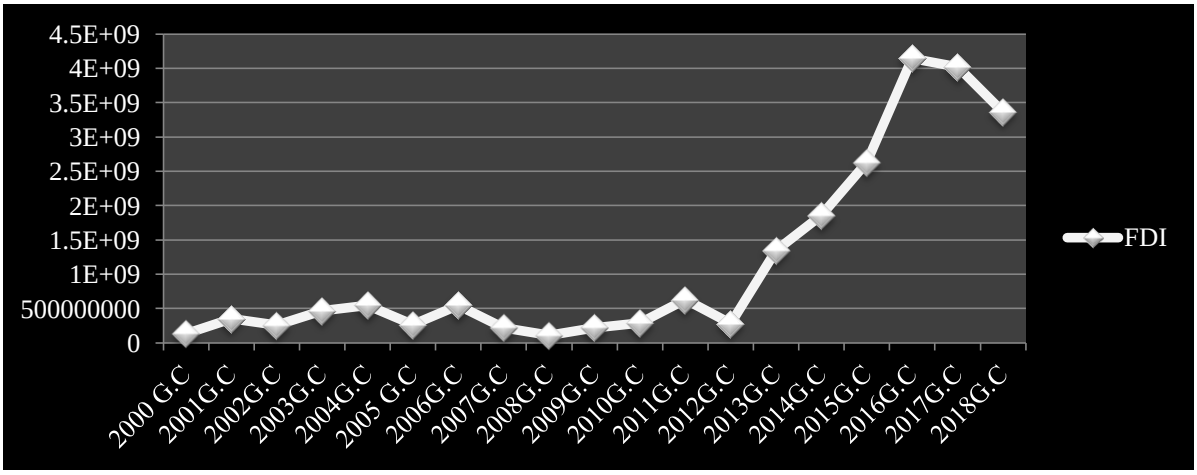

Figure 4- 3: Computation foreign direct investment

Source: Own Computation from World Bank

4.2.5 Trend analysis of trade openness

As shown figure 4.5 below the trade openness Ethiopian trade trend for the period 2000 -2018, Clearly as depicted there is a steady increments' trade trend in the early 2000s, decline in the late 2005s and which is lost in the late 2005s.A trade trends shows in the late 2009s is increase and a volatile growth in the early 2010s and steady decline in trade in the late 2010s and start to increase 2018.

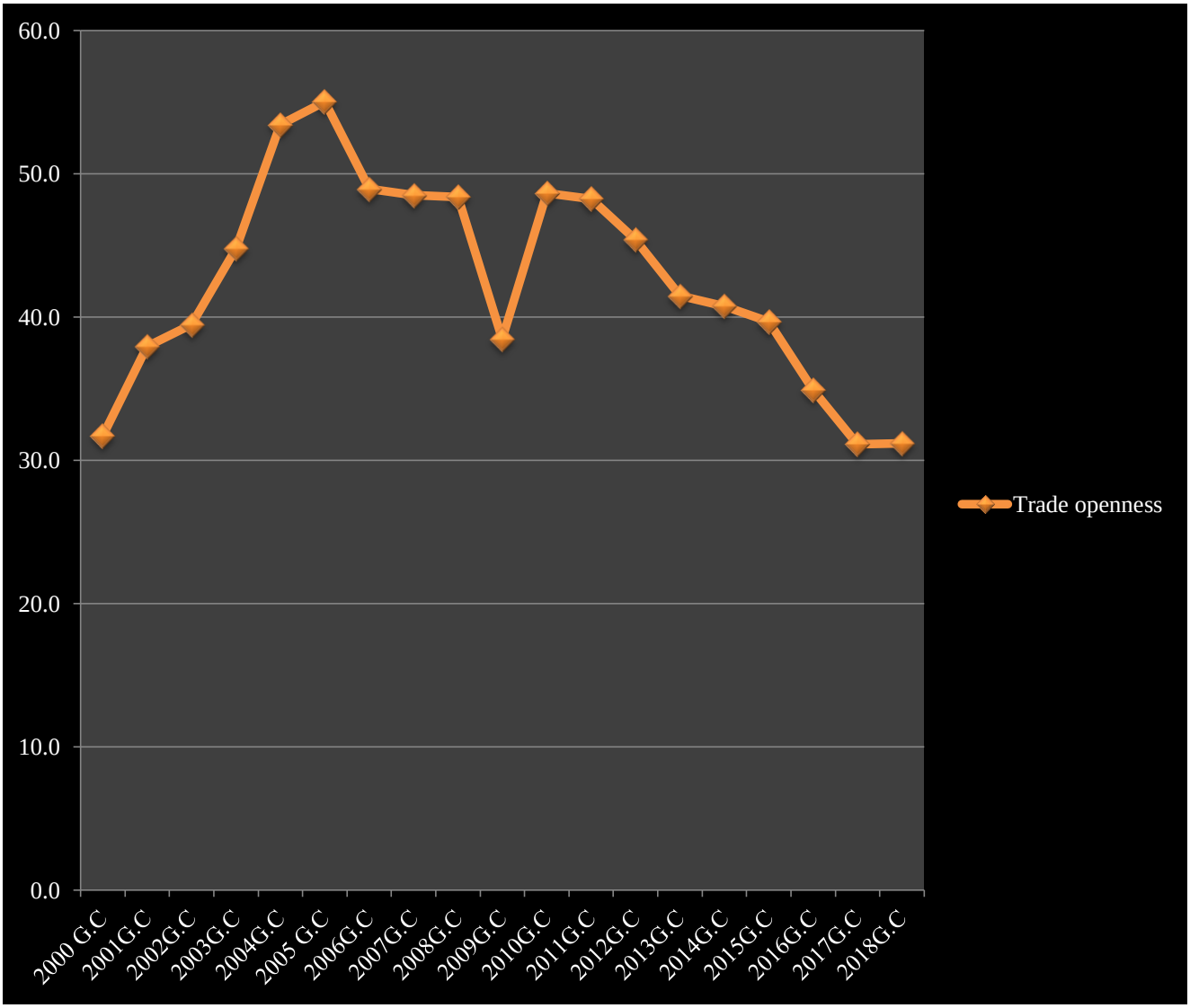

Figure 4- 4:Computation trade openness

Source: Own Computation from World Bank

4.2.6 Relationship between RGDP and construction

As shown in figure 4.6 below when expenditure on construction increase it will also indicates an increase of RGDP.

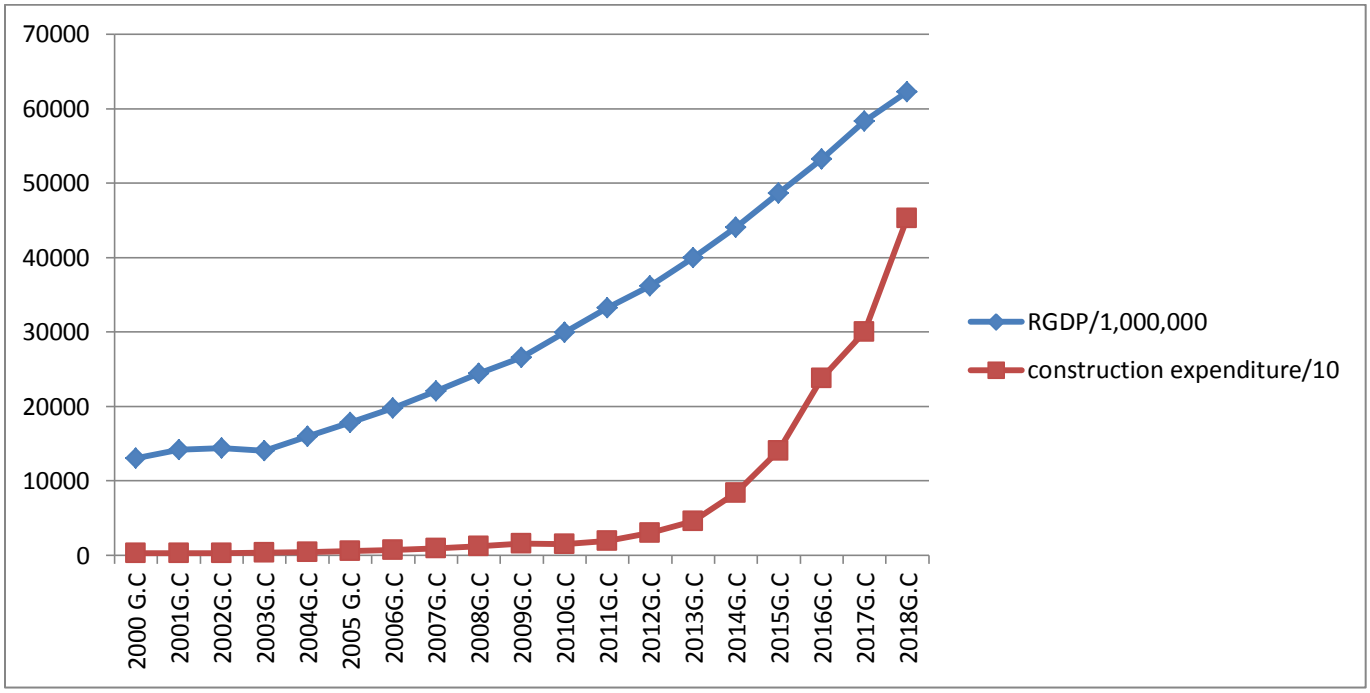

Figure 4- 5: Relation of RGDP and construction

Source: Own Computation from World Bank

On the above figure Economic growth of Ethiopia was on a downward trend in the 2003 but rapid growth of the economy is experienced from 2004 to 2018. Economic growth of Ethiopian was an upward trend since 2018 or the economic growth is increasing at increasing rate from 2004 to 2018.and also the construction increase in a decreasing rate between 2000 to 2009 but it declines in 2010, after this period the construction expenditure was an upward trend since 2018 it increases at increasing rate. The results reported above indicate that the expenditure on construction industry and the RGDP of the country have a positive relation. Generally when RGDP of Ethiopia is increase the construction will also increase.

4.3 Result of regression analysis

Multicollinarity test

The VIF test shows that to test the existence of whether there is multicollinarityproblem or not. As shown in table 4.1 below the result of the test indicates the highest VIF is 3.68 in other way the VIF value should less than 10, which shows that the model performed with no major multicollinarity problem among the explanatory variable.

variables	VIF	1/VIF
Construction expenditure	3.68	0.271806
FDI	3.59	0.278388
Trade openness	1.35	0.741538
Mean VIF	2.87	

Table 4- 2:multicollinarity test

Source: Result from STATA

Hetroskedasticty Test

The interpretation of Breusch-Pagan test is done using the p value, if the p value is less than 5% significant level it is the indication of hetroskedasticty problem .accordingly as show the table below the result of the test shows there is no hetroskedasticty problem since the p-value is greater than 5% significant level.

Breusch-Pagan/cook-Weisberg test for Hetroskedasticty
Ho: constant variance
Variable :fitted value of log Real GDP
Chi2(1)=0.07
Prob>chi2=0.7842

Table 4- 3Hetroskedasticty test

Source: Result from STATA

OLS MODEL Number of obs =19

F(3,15)=217.45

Prob>F=0.0000

R-Sq: 0.9775
Adg R-Sq: 0.9730
Root MSE: 0.08649

Log real GDP	Coefficient	Std. err	T. statistics	Prob.	95%cofidence interval	
Log Construction expenditure	0.3689265	0.0234835	15.71	0.000	0.3188726	0.4189804
Log FDI	-0.0687841	0.0331472	-2.08	0.056	-0.1394358	0.0018675
Log Trade openness	0.350414	0.1337259	2.62	0.019	0.065384	0.6354439
Constant	20.45757	0.7950603	25.73	0.000	18.76294	22.1522

Table 4- 4: Regression result

Source: Result from STATA

The regression model developed in this study for RGDP as a function of CE and TO is given by:

$$\ln\text{RGDP} = 20.45757 + 0.3689265\ln(\text{CE}) + 0.350414\ln(\text{TO})$$

The regression model point out the relationship between the dependent and the independent variables. The model result suggested that construction expenditure and trade openness have a positive and a significant impact on economic growth at p=0.05.

The first independent variable coefficient of construction expenditure (CE) is 0.3689265,which implies that ifa 1%change in construction expenditure is associated with a 0.3689265% change in economic growth. Which means 0.3689265 is the elasticity of economic growth with respect to construction expenditure**.**Different empirical study also shows construction expenditure positively related with economic growth. A study conducted by Mu'awiyaAbubakar, Muhammad Abdullahi and KabirBala(2018) Analysis of the Causality Links between the Growth of the Construction Industry and the Growth of the Nigerian Economy. They conclude that construction industry has significant positive effects on the economy.SimilarlyJIANGQifa (2013) Analysis on the Relationship between GDP and Construction Based on the Data of UK and China. He also revealed that construction and economic growth have positive correlation.

The coefficienttrade openness (TO) have0.350414, this implies that if a 1% change in trade openness is associated with a 0.350414% change in economic growth. It means 0.350414 is the elasticity of economic growth with respect to trade openness. Different empirical study also shows trade openness positively related with economic growth. A study conducted byMalefane& Odhiambo, (2018) Impact of Trade Openness on Economic Growth in South Africa they conclude that trade openness has a positive and significant impact on economic growth.The regression model output shows that the last independent variable foreign direct investment (FDI)hasinsignificant impact on economic growth. So it can be deduced that foreign direct investment has no any connection with RGDP growth.

CHAPTER FIVE

CONCLUSIONS AND RECOMMENDATIONS

5.1 Conclusions

The aim of the study was to determine the contribution of construction expenditure on economic growth in Ethiopia by using the most fitted regressionmodelofOLS estimator. The secondary data was collected from 2000-2018.The following conclusions are given from the regression output:

- The trend of construction industry expenditure in Ethiopia has shown a direct relationship with economic growth. However; it was observed that construction expenditure shown a fall in 2010 by as compared with the expenditure in 2009. It is argued that there was a national election during the time and that may be the cause for a fall in the construction expenditure.
- Construction industry expenditure has a positive correlation with economic growth in Ethiopia.
- Trade openness also has a significant positive effect on the economic growth of Ethiopia.
- The OLS model developed to regress the economic growth of Ethiopia measured by RGDP is given by the model,

$$\ln\text{RGDP} = 20.45757 + 0.3689265\ln(\text{CE}) + 0.350414\ln(\text{TO})$$

The finding of the model suggested that the growth of construction and Trade openness has a positive and significant effect on the economic growth of Ethiopia.Whereasforeign direct investment (FDI) has statistically insignificant relationship with economic growth of in the study area. Furthermore, the finding confirmed that using regression approach in Ethiopian economy in which construction and Trade openness has a positive spillover effect on the Ethiopian economic growth.

5.2 Recommendations

- The researcher recommends to the government of Ethiopia to sustainably allocate appropriate budget/ expenditure in to the construction industry to sustain the economic growth of Ethiopia.
- Since Construction Expediture has a significant contribution for economic growth of Ethiopia, descision makers are recommended to invest more on construction projects until the infurstructure needs of the society is satisfied.
- The government of Ethiopia shall prompote international trade in general and in the construction industry in particular so as trade openness can contribute its role in the economic geowth of Ethiopia.
- The government is recommended to provide programs on how to develop skills, knowledge and information in the construction companies. It must be understood that, for the development and progress of the construction industry, they ought to first improve Ethiopian's GDP. Once there is enough economic stability for the construction industry to prosper, the industry will serve as a major contributor to GDP.
- Providing clear policies and incentives to attract the local and foreign investors to contribute to advanced economic development. Making an urgent policy for increasing investment in the construction industry to eliminate the loss in infrastructure and the unemployment problem.

5.3 Areas for future research

- The present study did not find causal linkages between the construction industry and other economic sectors.This exploration would help to determine the possible cause between the construction industry and other economic sectors.
- The present study has only analyzed the impact of expenditure on the construction industry and its output. Future research ought to be conducted on other measures such as market share of the construction industry, size, productivity and other similar financial measures of the performance of the construction industry. Such studies will provide the policy makers to make better decisions based on concrete evidence.

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