ST, MARY'S UNIVERSITY
SCHOOL OF GRADUATE STUDIES
DEPARTEMENT OF GENERAL MBA

THE IMPACT OF CURRENCY DEVALUATION ON ECONOMIC GROWTH: ITS BENEFITS AND COSTS ON ETHIOPIAN ECONOMY

By

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ID No. SGS/0109/2010A

JUNE,   2019

Addis Ababa, Ethiopia

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A THESIS SUBMITTED TO ST. MARY'S UNIVERSITY, SCHOOL OF GRADUATE STUDENTS IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS ADMINISTRATION (GM CONCENTRATION)

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DECLARATION

I, the undersigned, declare that this thesis is my original work prepared under the guidance of Maru Shete (PHD & ASSOC.PROF) All sources of materials used for the thesis have been duly acknowledged. I further confirm that the thesis has not been submitted either in part or in full to any other higher learning institution for earning any degree.

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June 2019

ENDORSEMENT

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

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Maru Shete (PHD & ASSOC.PROF)   Signature

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List of Acronyms and abbreviations

MOFED   Ministry of Finance and Economic Development

NBE   National Bank of Ethiopia

CSA   Central Statistical Agency

GDP   Growth Domestic Production

FDI   Foreign Direct Investment

EU   European Union

UN   United Nation

EPRDF   Ethiopian People's Revolutionary and Democratic Front

EOI   Export Oriented Industrialization

ISI   Import Substitution Industrialization

AD   Aggregate Demand

STD.DEV   Standard Deviation

LDCs   Less Developed Countries

Abstract

In recent times, Ethiopia has experienced far-reaching economic growth and development changes. Despite this growth, the country has been chronically running a trade deficit. Devaluation is one of the most important but controversial trade policies recommended by the IMF for most of the developing countries in restoring the trade balance and increasing real GDP growth. To this end, this study identifies and analyzes impact of currency devaluation on Ethiopian economic growth with the intervening role of five major macroeconomic indicators namely export, import, inflation rate, FDI, and interest rate using mediation analysis with multiple regression using 27 years' time series data through SPSS software . Because of the quantifiable behavior of the variables, this research paper has used quantitative approach to fulfill the major objectives of the research. In addition to this; the overall frame word of the research was designed with causal or explanatory method in order to test the cause and effect relationship between the variables. The result showed that devaluation brought high inflation rate which adversely affected both domestic and international market of the country. Moreover, it increased the rate of growth of imports and decreased the rate of growth of exports; this indicated that devaluation does not have a significant impact on Ethiopian economy. Based on the findings, this paper suggests a quick structural economic policy reformation in order to tackle the existed problems of the country. Moreover, there is an obvious need to combine monetary policy measures with fiscal policy in order to promote sustained economic development.

Key-words: currency devaluation, exchange rate system, GDP, export, import, inflation rate, FDI, interest rate

CHAPTER ONE

INTRODUCTION

1.1. Background of the study

Every nation has three economic goals to attain both in the short and in the long run, these are achieving economic growth, creating more employment and having no or minimum inflation simultaneously. In order to achieve these goals and make their countries better off, countries use monetary and fiscal policies as a strategy and let their nation's aggregate demand curve to shift either to the right or left hand side. Fiscal policy is all about letting the government to collect taxes and spend it on public sectors like infrastructures, education and so on and which mainly focuses only on the domestic economy whereas, monetary policy deals with both domestic and international economy. Meaning, the government can use monetary policy and the exchange rate policy of devaluation in order to affect the domestic and international markets respectively. (Fratzscheret al, 2014)

By wide agreement, many less developed countries have "over-valued" currencies. Yet most countries are reluctant to devalue their currencies even when the signs of over-valuation are unmistakable. A variety of reasons are given for not devaluing, but most of them reduce to three basic objections: 1) devaluation will not in fact improve the devaluing country's payments position; 2) devaluation might work if given a chance, but it will unleash forces in the economy that will eventually undercut its benefits and those of other economic policies; and 3) even if devaluation works it will be politically disastrous to those officials who are responsible for undertaking it.

Despite these sources of resistance, in many countries, especially the developing ones, the weakening of their currency i.e. the decrease or depreciation of their own currency in terms of foreign currencies has become a central growth issue. Many development organizations like International Monetary Fund (IMF) support the idea of devaluation of currency as one means of economic growth besides the financial aid and loans to their member countries for the development of domestic firms. It will increase competitiveness of firms and increase the production of domestic products and output. However, some researchers focusing on developing countries (Krugman & Taylor, 1978) shed light on the negative effect of devaluation on output.

Despite ambiguous results from empirical studies devaluation of currency has been used as a growth strategy by many developing countries.

Ethiopia, which is one of the sub-Saharan countries, is listed as the least developed countries in the world. Many factors explain the weak economic development of the country. Policies like building up institutions, privatization of the public sector and devaluation of the currency were used in the last twenty years in order to create a sustainable economic development. The devaluation of the Ethiopian Birr (ETB) per US dollar officially began during the EPRDF regime. Previously the country used to have a fixed exchange rate with a rate of 2.07 Birr per US dollar. Some researchers held during the 1970 and 1980 the birr was overvalued leading to a trade and also public budget deficit. (Kidane, (1994) said that the overvaluation of currency was the result of the problem in the management. This overvaluation of currency highly discouraged the export as well as domestic production by making the price of imported goods cheap. In addition there was shortage of exchange rate and only few people had the chance to enter the market.

As a result of the overvaluation and scarcity of the foreign currency the unofficial or parallel exchange rate began to spread in the country. In mid-1980 the unofficial rate reached 6 or 7 birr per US where the official rate was still 2.07 birr per US dollar. Taking this into account the transitional government of Ethiopia decided to devaluate the currency to 5 birr per US dollar in 1992. The devaluation of exchange rate was expected to increase output by encouraging the export sector as well as increase domestic production. (Taye, 1999)

After the devaluation in 1992 the exchange rate is changed from fixed to flexible rate in order to control overvaluation through a gradual depreciation of domestic currency every year. The gap between the unofficial and official rate also decreased compared to the period when the exchange rate was fixed. However during the fiscal year 2007/08 the rate of depreciation against other foreign currencies increased compared to the previous years. One In the 2009/10 and September 2010/2011 the Ethiopian Birr was depreciated to 23.7% and 16.5% respectively against the US dollar. This huge devaluation was expected to "decrease overvaluation and increase competiveness" (IMF, 2010; MOFED, 2009).

The increase in depreciation rate was expected to encourage the export sector. The higher increase in export rate, the better the rate of growth of the economy. The export of goods and

services was 11% of the GDP in 2009 and yet the trade balance is negative. The world financial crisis where the major importing countries decreased their import quota might have a negative role in the decrease of the export as well as low growth since export is one part of the GDP (NBE, 2010).

On October 10, 2017, the National Bank of Ethiopia (NBE) devalued the Birr by15 percent as pressures on the foreign exchange intensified. According to the Government, the devaluation was undertaken to encourage exports and overcome the foreign exchange shortage. Exports, which with remittances constitute Ethiopia's main source of foreign exchange, have seriously underperformed in recent years (as compared to the Government's objective in its Development Plan).

This paper aimed to identify and analyze the benefits and costs of currency devaluation on Ethiopian economic growth by considering economic growth measured by growth domestic product (GDP) as dependent variable and currency devaluation as independent variable with the intervention of export, import, inflation rate, foreign direct investment (FDI), and interest rate by using the past 27 years data from 1992 to 2018 G.C in the context of Ethiopia.

1.2.   Statement of the problem

Devaluation is mainly government intervention in the exchange rate market of the country to determine the price of Birr in terms of dollar-some kind of government price setting. Simplified, devaluation makes Birr cheaper relative to the dollar, and hence you will need more Birr to get a dollar, compared to the current rate of exchange. In short, you need more Birr to buy a unit of dollar, and the people who can afford to buy dollar declines. (Ayano, 2017)

There are several reasons behind the need to devalue currencies. Some do it to promote exports and restrain imports. The simplified assumption is this. If the local currency becomes cheaper due to devaluation, foreigners can buy the local export products more cheaply and hence exports will increase. On the other hand, cheaper local currency can serve as an import restraint since foreign products become more expensive in local currency and importers need more Birr to buy foreign products, and hence increase the cost of living.

When it comes to the developing economies like Ethiopia, with limited export promotion power, the devaluation policy measure is mainly related to exchange rate stability due to imbalance between supply and demand of hard currencies. As repeatedly explained by the government officials, including the Prime minister & the President of Ethiopia, there is severe shortage of hard currencies in Ethiopia caused by limited hard currency earning power of Ethiopia's exports whereas imports have grown folds more than exports. Ethiopia gets dollar from exports and needs dollar for the imports. The gap between the dollar earning and dollar spending capacity leads to part of the current account deficit called trade deficit (export values less than import values). The gap has been expanding every year-even more so in recent years. If you buy something (imports) you have to pay for it via exports, foreign aid in hard currency, remittances, etc. The growing gap between exports and imports is not sustainable. It's important to note that foreign exchange rate crisis is one of the major sources of economic crises that ravaged the economies of a number of countries including Ethiopia.

Therefore, the devaluation of Birr, which has been urged by the World Bank for years, is the policy measure undertaken by the regime to relieve a crippling dollar shortage and meager foreign exchange reserve of Ethiopia. The World Bank, EU, IMF, etc. cover the foreign exchange gap of Ethiopia so that the economy does not collapse due to the shortage of foreign exchange. Without international support and the Diasporas remittance, Ethiopia can easily become hard currency illiquid country that cannot pay for its imports or pay for its debts in hard currency.

Although the shortage of hard currency is a common phenomenon of poor countries like Ethiopia with limited exports, the widening gap between Ethiopia's earning and spending in hard currency is evidently not sustainable. It can kill economic growth. At worst, it can lead to economic crisis due to currency (exchange rate) crisis since there is vivid evidence of liquidity gap in hard currency in Ethiopia owing to its weak foreign exchange earning capacity.

The developing countries economy like Ethiopia were open to different economic problems like increase in current account deficit, continues decline of foreign exchange reserve and high inflation rate at home. To solve these problems some countries forced to the stabilization and structural adjustment programs with the support of international monetary fund and World Bank.

The adjustment programs promote the substantial devaluation of nominal exchange rate. Standing with the objective of structural adjustment programs, Ethiopian government (1992/3-1993/4 like other developing countries applies the macro economic reform measures including exchange rate devaluation (African development bank, 2000).

However, taking devaluation as a solution may not be an easy task as it is not possible to apply in any circumstance to get the desired effects without some unlikely outcomes along with the favored results (Bekele, 1999). Ethiopia's decision to devalue the birr brings to mind Albert Einstein's definition of insanity: doing the same thing over and over again and expecting a different outcome. Beside that the EPRDF regime has done it more than enough number of times to know that the country would not achieve any economic gain by devaluing the currency. It was time the authorities do something else to address Ethiopia's economic malaise.

The previous empirical researches have been reached the major findings on devaluation and its impact in the context of Ethiopia as follows. Devaluation has short term contractionary effect and long term expansionary effect on the economic activities of developing countries. Eltalla et.al (2013) analyzed the impacts of the devaluation on the Palestinian economy using a computable general equilibrium model. They found that a 15% devaluation of the exchange rate results in a lower real gross domestic product, lower import and low export, lower private consumption and higher inflation. The study by Gylfason and Risager (1984) suggests that devaluations are generally expansionary in developed countries and likely to be contractionary in developing countries. Haile (1999) used a macro simulation approach to study the impact of devaluation on macroeconomic performance of Ethiopia and found that devaluation would improve the current account balance, while it decreases output and employment. Yilkal (2014) studied the short and long run effects of currency devaluation on output growth in Ethiopia using a vector auto-regression model. The findings showed that currency devaluation is contractionary in the long run and neutral in the short run. On the other hand, depreciation is expansionary in the short run; it is neutral in the medium and long run. That means the conflicting effects of devaluation will be cancel each other and result in zero effect in the long run (Edwards, 1986). So that, those findings were conducted simply to identify the direct effect of devaluation on economic activities of developing countries including Ethiopia they lacks to identify the reason why devaluation adversely affect Ethiopian economy and lack to analyze the indirect effect of

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devaluation on economic activities of Ethiopia. In addition to these, those evidences didn't indicate the best possible direction how those countries will get sustainable economic development by applying currency devaluation and what must be done before applying currency devaluation should be taken in to account.

As we know that the simplified assumption of devaluation is to increase exports and to discourage imports so it has indirect relationship with the GDP of the country by affecting both the domestic and international markets of the country.in order to present these issues, this research was done to identify the major causes for the negative impacts of devaluation on Ethiopian economy and by analyzing both the direct and the indirect effect of devaluation on Ethiopian economy with the mediating effect of selected macroeconomic indicators to fill the existing research gap and to suggests the best possible economic policy should be applied before using currency devaluation and what effective economic policy should be followed in order to get sustainable economic development in case of Ethiopia.

This paper was conducted to identify and analyze the benefits and costs of currency devaluation on Ethiopian economic growth by identifying the major reasons why the country Ethiopia did not achieve better economic gain by devaluing its currency. These are an overall economic structural policies of the county, it doesn't promote foreign direct investments, don't facilitate agricultural diversification which is the most important issues in order to discourage importing of unnecessary consumable products, there is no adequate import substitution strategies to discourage importing of unnecessary consumable goods and products and exports promotion strategies , the policies doesn't efficiently facilitate domestic manufacturing industries, there is no selective and effective government intervention on both domestic and international market, the government unable to control Illicit outflow of hard currency, devaluation brings high inflation rate, and even though the government makes the 2 percent increment on interest rate due to the presence of high inflation rate still it's not proportional with the existed inflation rate so that it may not encourage the investors for attracting them to deposit their money. Due to these reasons Ethiopia has faced economic problems and it would not achieve any economic gain by devaluing the currency.

1.3. Basic research questions

➢ What are the benefits of currency devaluation on Ethiopian economic growth?

➢ What are the costs of currency devaluation on Ethiopian economic growth?

➢ What are the major reasons why devaluation could not efficiently contributes on the growth of Ethiopian economy?

➢ What are the best possible solutions to overcome problems of currency devaluation on Ethiopian economic growth?

1.4. Research objective

1.4.1. General objectives

The general objective of this research paper is to identify and analyze the benefits and costs of currency devaluation on Ethiopian economic growth.

1.4.2. Specific objectives

➢ To test the relationship between GDP and currency devaluation with the mediating role of inflation rate.

➢ To test the relationship between GDP and currency devaluation with the mediating role of FDI.

➢ To test the relationship between GDP and currency devaluation with the mediating role of interest rate.

➢ To test the relationship between GDP and currency devaluation with the mediating role of export.

➢ To test the relationship between GDP and currency devaluation with the mediating role of import.

1.5. Research hypothesis

In line with the above specific objectives the following five hypotheses were tested in order to know whether there is a significant relationship between dependent and independent variables with the role of the intervening variables or not.

➢ H0: There is no statistically significant relationship between GDP and currency devaluation with the mediating role of inflation.

➢ H1: There is statistically significant relationship between GDP and currency devaluation with the mediating role of inflation.

➢ H0: There is no statistically significant relationship between GDP and currency devaluation with the mediating role of FDI.

➢ H1: There is statistically significant relationship between GDP and currency devaluation with the mediating role of FDI

➢ H0: There is no statistically significant relationship between GDP and currency devaluation with the mediating role of interest rte.

➢ H1: There is statistically significant relationship between GDP and currency devaluation with the mediating role of interest rate.

➢ H0: There is no statistically significant relationship between GDP and currency devaluation with the mediating role of export.

➢ H1: There is statistically significant relationship between GDP and currency devaluation with the mediating role of export.

➢ H0: There is no statistically significant relationship between GDP and currency devaluation with the mediating role of import.

➢ H1: There is statistically significant relationship between GDP and currency devaluation with the mediating role of import.

1.6.   Significance of the study

The major significances of the study helps to identify and suggest the best possible solutions to the government how its economic policies gaps can be modified in order to overcome problems caused by currency devaluation it can leads the county to keep in touch with benefits that are gotten from currency devaluation and to drop and reduce its economic costs or crisis caused by the devaluation. The study also very significant as it contributes to the literature and would also assist policy makers and economists in decision making as regards devaluing currency. The Ethiopian government has been implementing devaluation as the policy instrument to overcome the problem of economic growth. Since the application of the policy instrument up to know the countries balance of trade runs under deficit. It's necessary to look at the great problems of the economy, hence this study provides to give direction for further studies and suggest some basic

recommendation for policy measures on the effects of exchange rate devaluation on the economic growth. In addition to these, it also acts like a guide to student researchers who may find the recommendations and finding of the study useful.

1.7. Scope and limitations of the study

The study has covered currency devaluation in developing countries specific to Ethiopia and how this has affected country's economies. A case of Ethiopia was looked at, how currency devaluation affects Ethiopian economies, costs and benefits of currency devaluation in Ethiopian economies and current economic structural policy of Ethiopia was also covered. Additionally, the research used the time series data which includes the period from 1992 to 2018 G.C for analysis. The issues of evaluating the benefits and the costs of currency devaluation on economic growth are enormous and wide and due to the existence of unfavorable exchange rate fluctuation in the country, there may exist some gaps on the research findings. Another limitation of this study concerns data on the Ethiopian economy because it lacks consistency, different data sources give different information or fact or records for the same variable.

1.8. Organization of the research report

This research paper is organized in to five chapters namely introduction, literature review, research methodology, data analysis and interpretation and summary, conclusions and recommendations respectively. The remaining parts of the paper starts from Chapter two which deals about Literature review and which contains Theoretical and empirical literature and conceptual framework. Chapter three is about research methodology and which contains research approach and design, sources and instruments of data collection, producers of data collection, explanations of variables, and methods of data analysis. Chapter four represents data analysis and interpretation which contains major research finding and results. The final chapter of the study is about summary, conclusions and recommendations.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1. Theoretical literature review
2.1.1. Devaluation definition

Devaluation is a policy-related activity that lessens the value of a local currency compared to foreign ones; particularly major trade partners. Devaluation means the process under certain circumstances in which currency loses its purchasing power. Devaluation is the official alteration in the value of a currency relative to foreign currencies by a regulatory body usually by the central bank under the circumstance of fixed exchange rate. In floating ex-change rate system, market forces may generate changes in the value of the currency, known as currency depreciation or appreciation. Devaluation or depreciation of a country's currency is usually triggered when the country is experiencing an adverse Balance of Payment or Balance of Trade crisis or by worsening economic conditions transmitted into the domestic economy from the foreign market. When the government devaluate its currency, it is often because of the interaction of market forces and policy decisions that lead to the currency's fixed exchange rate change. In order to sustain a fixed ex-change rate, a country must dispose sufficient foreign exchange reserves, often dollars, gold and be willing to spend them, to purchase all offers of its currency at the established exchange rate. By convention, changes in the value of a currency are measured against the American dollar, so devaluation means a reduction in the dollar price of a unit of foreign currency or, in other words, an increase in the number of units of the foreign currency that can be purchased for a dollar. (The Nation, 2012)

2.1.2. Expansionary and contractionary effect of devaluation

The large external imbalances are the most important cause of the currency crisis in developing countries. The countries which face up to the currency crisis lose out their external positions because of decreasing export volumes. The devaluation is an effective and noteworthy economic policy tool for increasing export volumes and ameliorating the external position of countries. By raising the exchange and increasing the relative prices of imports, devaluation or currency

depreciation switches imports demand to domestically produced goods (Sencicek and Upadhyaya, 2008).

It is assumed that the devaluation has "expansionary impacts" on total output. According to the traditional theory, it is expected that depreciation in domestic currency generally decreases the relative price of domestically produced goods and thereby stimulates demand for domestic export. Hence, currency depreciation can be expected to have expansionary effects on real output (Bahmani et al., 2002). Although it is expected and assumed that devaluation has expansionary effects on total output, some of the empirical studies refer.

The results that the devaluation has "contractionary impacts" on total output decreasing the channels of aggregate supply and aggregate demand. The foreign demand on relatively inexpensive domestic goods provides to increase exports and decrease imports and these circumstances boost the aggregate demand. However, Krugman and Taylor (1978) argue that the currency depreciation can shift the distribution of income from the groups the marginal propensity to save to the groups the high marginal propensity to save. This would decrease the consumption and in consequence, the aggregate demand. On the other hand, raising the exchange rates reduces the cost of external (imported) goods then this declines the aggregate supply. Thereby a decrease in aggregate demand and aggregate supply cause a decrease in total output.

2.1.3. Structural economic policy

An economic policy is a course of action that is intended to influence or control the behavior of the economy. Economic policies are typically implemented and administered by the government. Examples of economic policies include decisions made about government spending and taxation, about the redistribution of income from rich to poor, and about the supply of money and so on. The effectiveness of economic policies can be assessed in one of two ways, known as positive and normative economics. Positive economics attempts to describe how the economy and economic policies work without resorting to value judgments about which results are best. The distinguishing feature of positive economic hypotheses is that they *can be tested* and either confirmed or rejected. For example, the hypothesis that "an increase in the supply of money leads to an increase in prices" belongs to the realm of positive economics because it can be tested by examining the data on the supply of money and the level of prices. Normative economics

involves the use of value judgments to assess the performance of the economy and economic policies. Consequently, normative economic hypotheses cannot be tested. For example, the hypothesis that "the inflation rate is too high" belongs to the realm of normative economics because it is based on a value judgment and therefore cannot be tested, confirmed, or refuted. Not surprisingly, most of the disagreements among economists concern normative economic hypotheses.

The goals of economic policy consist of value judgments about what economic policy should strive to achieve and therefore fall under the heading of normative economics. While there is much disagreement about the appropriate goals of economic policy, several appear to have wide, although not universal, acceptance. These widely accepted goals include:

- Economic growth: Economic growth means that the incomes of all consumers and firms (after accounting for inflation) are increasing over time.
- Full employment: The goal of full employment is that every member of the labor force who wants to work is able to find work.
- Price stability: The goal of price stability is to prevent increases in the general price level known as inflation, as well as decreases in the general price level known as deflation.

(The concise encyclopedia of Economics, structural economic policy)

2.1.4. Devaluation background in the context of Ethiopia

In Ethiopia the exchange rate policy has passed different regimes (Kassie, 2015). According to Kassie (2015), before 1992 the country was exercising a fixed exchange rate regime, in which the rate was solely determined by the government. Since 1992 the country started implementing an exchange rate policy which is more close to managed floating, where there is a government intervention whenever necessary to stabilize the foreign exchange market.

According to Michael (1996) the official exchange rate of Ethiopian currency with US dollar was 2.48 *Birr* per US dollar from July 23, 1945 to December 31, 1963. After almost two decades, that is, on 1 January1964, the Ethiopian *Birr* was slightly devalued to 2.50 *Birr* per US dollar. In 1971 following the floating of dollar and ceasing of its convertibility to gold, the *Birr* was revalued to 2.30 *Birr* per US dollar (i.e., by 8.75%) on 21 December 1971. This rate served until 1972. Not so long after, however, the U.S dollar price again was devaluated by 10 %. The

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subsequent 10% devaluation of the US dollar had temporarily brought about under valuation of the *Birr*. The Ethiopian *Birr*, it was revalued to 2.07 *Birr* per US dollar in February 1973. As the price level increased and shortage of foreign exchange become acute, the real exchange rate appreciated and an alternative unofficial foreign currency market became widespread, and the un-official exchange rates averaged about 6 to 7 *Birr* per US dollar (Taye, 1999). However, this fixed official exchange rate was left unaltered for two decades despite the floating of the major world currencies including the US dollar (1974-1991).

Then on October 1992 the transitional government of Ethiopia made a massive devaluation of the currency by 142 % from its pegged rate of 2.07 *Birr* per US dollar to 5 *Birr* per US dollar, showing the first major change on the value of *Birr* (Eshetu, 2017). According to Eshetu, (2017), this measure was made for combating current account as a new economic reform program de-signed to stimulate the external imbalance, boost output growth in general and export growth in particular. After the devaluation in 1992 the exchange rate is changed from fixed to flexible rate in order to control overvaluation through a gradual depreciation of domestic currency. However, during the fiscal year 2007/08 the rate of depreciation against other foreign currencies increased compared to the previous years. In the 2009/10 and September 2010/2011 the Ethiopian *Birr* was depreciated to 23.7% and 16.5% respectively against the US dollar (Genye, 2011). On September 2010, the currency devaluated by 16.7 % from a value of 13.63 to the US dollar to 16.35 was apparently to boost export performance and bring about structural change in the economy (Bienen et al, 2010). Consequently, this devaluation of the Ethiopian currency against major foreign currencies resulted in price inflation rising into the double-digits on both imported and locally manufactured goods.

After seven years, the Ethiopian's central bank devalued *Birr* by 15 % on October 10, 2017. The *Birr* was quoted by the National Bank of Ethiopia (NBE) at a weighted average of 23.41 against the US dollar to be 26.92 *Birr* per US dollar. The central bank also announced that it has raised the main interest rate to 7 percent from 5 percent to stimulate savings as well as to counter the inflation (Maasho, 2017).

2.1.5. Exchange rate systems

Exchange rate can simply be defined as the current market price of the home currency exchanged for foreign currency. (Obstfeld et al, 1995)

According to (Klein & Shambaugh, 2009: 29) and other many economists there are three main types of exchange rate regimes such as free floating or flexible exchange rate regime, pegged or fixed exchange rate regime, and pegged floating or managed floating exchange rate regime. Though the above mentioned once are basic types of exchange rate regimes.

2.1.6.1. Free floating (flexible) exchange rate regime

It is a type of exchange rate in which the value of a nation's currency is allowed to fluctuate based on the demand and supply of the foreign exchange market. The price is determined by market forces of the demand and supply of the foreign currency without any intervention by the government. Therefore, there is a probability of getting different prices for one currency in terms of the other currency with in some specific time interval, following fluctuations in the demand and supply of foreign currency.

Free floating exchange rate works without any government intervention and the market automatically adjusts itself when fluctuation occurs in the demand or supply of foreign currency (appreciation or depreciation). The adjustment process enables the exchange rate to get its new equilibrium price level and which results BOP to react accordingly based on the elasticity of demand and supply of imports and exports and finally end up with getting new equilibrium. (Asmamaw, 2008)

According to (Frankel, 2003), floating exchange rate regime has its own advantages for the practicing nation especially if both domestic and international markets for currency are well-developed.

Advantages of floating exchange rate regime can be stated as follows; first, the system can automatically adjust Balance of Payment. If there is a balance of payment BOP deficit, currency depreciation will occur and importers will either pay more hard currency in order to import the previous amount of goods or will import less therefore, the demand for import as well as hard currency will decrease as a result, BOP will reach its equilibrium. Second, the system avoids

speculative attacks that occurred due to the pegged system, since flexible exchange rate system needs low foreign exchange reserves compared with the pegged one. The central bank doesn't supposed to accumulate a huge amount of hard currency in the form of reserve so as to let the system to function properly even though there is an external shock. The floating exchange rate regime allows a nation to re-act accordingly in order to adjust the exchange rate in more flexible manner that is why it is not that vulnerable for crises.

Third, the system gives independence to the monetary policy therefore, if the nation faces some shocks from the demand side, the government will be flexible to employ any kind of monetary policies so as to alleviate the ongoing demand deterioration problem so that the nation won't face economic recession in such a system. In addition, the system allows the central bank to retain seigniorage income, which is a profit that the central bank earns whenever it prints money or in other words it is the difference of the value of a single unit of money and the cost of making & distributing that single unit of note.

Even if the system has different advantages for once economy, it's not free from criticism and the three main disadvantages of the system are Uncertainty, high volatility and unpredictability.

Uncertainty: Since there is no guarantee for both importers and exporters in floating exchange rate regime where the values of exchange rate is changing as the demand and supply of foreign currency changes, investors are not certain about the real earnings from exports and the real costs of imports therefore, the uncertain nature of the system leads the investors not to fully employ their resources and produce what they are potentially able to produce. (Bain, 1982: 177)

High volatility: Due to the existence of speculators and the increase in the supply of Dollar, free floating exchange rate regime increases the volatility of foreign exchange. In the first case, speculators can invest on any countries financial sector when it seems promising to invest in that nation and they also can withdraw their money whenever they feel unhappy and which disturbs the financial sector.

(The concise encyclopedia of Economics, Exchange rates)

This is a very serious issue for developing economies because, developing countries in general and third world countries in particular have debts from different international financial institutions and they have to pay back their liabilities in terms of hard currencies like dollar and Euro. But the government earns its revenue in local currency. Therefore, if unexpected depreciation occurs in the nation's currency due to the system operating on, it could be very hard

for the government to convert domestic currency in to hard currency and pay back its debts. This will results the entire economy to be unstable and the financial sector to be in danger.

Unpredictability: The unpredictable nature of the system may hinder international investors from going to invest in different sectors of the nation. Since the system is highly vulnerable for shocks, both local and international business men should take the risk when they are planning to invest in the nation's economic sectors. This is due to the nature of high dynamism of exchange rate in the floating regime. (Hakkio, 1984)

2.1.6.2.   Fixed (pegged) exchange rate regime

In a fixed exchange rate, a country's currency is fixed against the value of another single currency, or to another measure of value, like gold. It is a system in which government plays significant role regarding with deciding the worth of its currency in terms of either a fixed weight of gold, or a fixed amount of another currency.

When there is a mismatch between the nation's fixed exchange rate and free market rate of foreign exchange which is determined by the demand and supply of hard currency in the nation, the government obligated to fill the gap by taking from its foreign exchange reserve. The government may interfere in to the market through two different ways. First, it can interfere through buying or selling of its own currency or foreign currencies. Under the fixed exchange rate system, commercial banks have to buy and sell the domestic currency at the determined rate. But the market equilibrium exchange rate may not coincide with the pre announced spot rate. Due to this reason the central banks always maintain reserves of foreign currencies and gold which they can sell in order to intervene in to the foreign exchange market to make up the excess demand or take up the excess supply. Second, Government can simply make trading currencies at any other rate is illegal. In fact this method is rarely used because it is hard to enforce and sometimes it leads to a black market in foreign currency.

If the nation faces shocks which arise from money demand or supply primarily, the policy of a fixed exchange rate regime looks attractive.

Advantages of fixed exchange rate regime are reducing both volatility, uncertainty, high inflation, and destabilization of currency market speculation on one hand and facilitating trade and investment on the other hand.

A fixed exchange rate enables fluctuations in relative prices and currency volatility to reduce. It provides a nominal anchor to price inflation for internationally traded goods and it leads private sectors to reduce their inflation expectations in the economy. (Obstfeld and Rogoff, 1995: 6-7)

It is known fact that stability in real economic activities can be achieved through less fluctuation both in relative prices and currency volatility and also through less expectation of future inflation.

Uncertainty is no longer a problem in fixed exchange rate system since exchange rate is predictable and non-volatility therefore; exchange rate risks that are related with uncertainty will be eliminated. (Obstfeld and Rogoff, 1995: 6)

Speculation in the currency markets is relatively less destabilizing under a fixed exchange rate system and it is mostly a case for floating exchange rate system. Mostly Investors are investing their huge amount of money on the foreign exchange market when they think that the market is promising and they withdraw the money immediately when some economic inconveniency is occurred. Therefore fixed exchange regime enables the central bank to control over the inflow and outflow of capital. And in fact, the stability of the economic system is maintained mainly through capital control. Therefore fixed exchange rate regime can avoid speculative bubbles. (Frankel, 2003)

Fixed exchange regime enables trade and investment to be facilitated between two different countries. This is because of the fact that if the nation uses fixed exchange rate system, it could be easy for merchants and investors to predict about the nation's economy and the outcome of their business as well. (Frankel, 2003)

Fixed exchange regime prevents currency appreciation or depreciation by inspiring confidence in the ¨strength¨ of domestic currency which reduces volatility and fluctuations in relative prices. Fixed exchange rates are anti-inflationary; it can make the domestic firms and employees" costs under control in order to remain competitive in international markets. As a result the government maintains low inflation and in a long run reduces interest rate to promote trade and investment (Asmamaw, 2008). It is known fact that the people expectation towards the future price level of goods and services play a crucial role in determining the actual inflation level of the country. Therefore, fixed exchange rate can avoid high inflation expectation from the people's mind and which enables actual inflation rate of the nation to be minimum.

Even if fixed exchange rate system has so many advantages, it has also disadvantages and the main criticisms of fixed exchange rate regime are described below:

The system cannot automatically adjust itself. It is known fact that fixed exchange rate mainly aims to adjust the balance of trade but when a trade deficit occurs, there will be more demand for the hard currency, rather than the domestic one and which will lead the price of the foreign currency to increase in terms of the domestic currency so that the domestic currency will highly depreciate whenever there is a trade deficit additionally appreciation or depreciation is not allowed in the system therefore, in order to keep the exchange rate constant, central bank has to withdraw hard currencies from its reserves and should spend it to the market and which may create some financial inconveniences specially in the case of LDCs.

The system cannot function in the places where the financial and the banking system did not develop well. The absence of strong financial, monetary and banking institutions may make pegged exchange rate system difficult for emerging countries. (Calvo and Mishkin, 2003:16). Since the system needs much more hard currency reserve and the central bank needs to hold stocks of both foreign and domestic currencies at all times in order to adjust and maintain the exchange rates and let the system to function as before, it is not appropriate for every country to use. Especially for LDCs whom have a BOP deficit can't solve their economic problems by using fixed exchange rate system. Thailand, Malaysia, South Korea, and other nations in Asia region had kept exchange rates fixed from 1997-98 and face macro-economic crises. (Calvo and Mishkin 2003: 2). In addition, there might be the possibility of policy delays and mistakes in achieving external balance and it might be hard for the government to know exactly when to intervene to the market. According to (Calvo and Mishkin, 2003:14) pegged exchange rate mostly narrow the scope of the flexibility of the monetary policy.

The announced rate of exchange may not coincide with the market equilibrium rate of exchange. This leads to excess demand or excess supply of hard currency and puts heavy burden on the central bank of the nation as well as the government. This is specially the case if the nation's balance of payment (BOP) faces deficit frequently due to the fact that, if the nation faces one sided BOP disequilibrium i.e. BOP deficit for several years, the central bank can't offer the demanded amount of foreign currency in to the market in order to support the exchange rate of domestic currency and which may results an immediate devaluation of the domestic currency

with all its adverse effect of letting the people confidence towards their home currency to evaporate. (Asmamaw, 2008)

Fixed exchange rate system can't control the problem of BOP deficit rather; different factors other than fixed exchange rate can fix the problem. As a result fixed exchange rate system may create internal economic instability while it is working for achieving external stability of exchange rate.

2.1.6.3.   Managed (Dirty) floating exchange rate regime

We can say that Managed floating exchange rate system is a system which combines both fixed and floating exchange rates. On one hand, it allows the market to adjust the exchange rate and arrives at its equilibrium level and on the other hand it allows the government to intervene in to the exchange market whenever intervention is needed so as to protect the domestic currency, trade balance and nation's economy from external shocks, it might be through buying and selling of currencies or through some other means.

In managed floating exchange rate regime, not only the central bank intervenes in to the foreign exchange market but also international agencies such as IMF. According to (Sarno and Taylor), the central bank can officially intervene in to the foreign exchange market through buying or selling of foreign exchange against the domestic one by aiming to affect the exchange rate. (Sarno and Taylor, 2001)

As (Bofinger and Wollmershäuser, 2001: 51) described, "There is nothing in existing theory, for example, that prevents a country from pursuing a managed float in which half of every fluctuation in demand for its currency is accommodated by intervention and half is allowed to be reflected in the exchange rate." Which means in other words, almost all currencies could be considered as the one who is practicing managed floating exchange rate regime as long as central banks or governments intervene to the foreign exchange market in order to influence the value of their currencies. As we can see, whenever the world economy got growing, Nation's become more dependent on international and multilateral trades therefore, exchange rate become extremely vital in affecting the nation's trade balance and economy as well.

Advantages of Managed Floating exchange rate regime can be stated as follows;

According to (Bofinger and Wollmershäuser, 2001: 51-52) Managed floating exchange rate system has some critical importance such as: first, it assures some sort of stability both in the financial market and in the economy as a whole since the government occasionally intervenes in to the foreign exchange market. Therefore, the regime is able to avoid a dramatic currency fluctuations and financial speculations in domestic market. In fact half- stability can also be attained by implying fixed exchange regime in the economy but while it reaches half stability, it would lose free capital mobility and market independence. Second, it assures some sort of exchange market independence therefore the regime promotes better allocation of resources and improvement of the BOP account. Since the exchange rate is at its appropriate level to promote trade in the nation, the nation's BOP will be improved and resource will also be appropriately allocated.

The regime integrates an approach of determining the required optimum interest rate level with the optimum exchange rate path simultaneously. This helps the government to handle a sudden and massive unemployment problems and financial crisis in an economy; perhaps it could be the case for floating exchange rate regime. Generally, managed floating regime allows capital mobility, monetary autonomy (some sort of independence for the demand and supply interaction of the foreign exchange market) and exchange rate control as well as occasional intervention to the market simultaneously.

As (Krugman and Obstfeld, 2003) described, "A system of managed floating allows the central bank to retain some ability to control the domestic money supply, but at the cost of greater exchange rate instability. If domestic and foreign bonds are imperfect substitutes, however, the central bank may be able to control both the money supply and the exchange rate through sterilized foreign exchange intervention. Empirical evidence provides little support for the idea that sterilized intervention has a significant direct effect on exchange rates. Even when domestic and foreign bonds are perfect substitutes, so that there is no risk premium, sterilized intervention may operate indirectly through a signaling effect that changes market views of future policies". (Krugman and Obstfeld, 2003: 518)

Though Managed floating exchange rate regime has advantages over fixed and floating exchange rate regimes, it has also some weaknesses, and the main weaknesses of this regime are expressed by (Bofinger and Wollmershäuser, 2001:52).

Primarily, whenever the central bank does not announce the exchange rate path, the private sectors wouldn't predict about the future economic situations by using current exchange rate specially when there is disinflation in the economy. Secondly, if the control over the exchange rate is asymmetric or mismatch with the needed rate of exchange, and huge amount of capital out flow taken place following the misalignment, the central bank may lose its control over the macroeconomic variables.

As long as the central bank or government is able to decide autonomously over the exchange rate, there is high probability for the occurrence of beggar-my-neighbor policy, which is a kind of policy that makes countries to promote their economy at the expense of their neighbors and which undermines the aims of the WTO.

A dirty floating or Managed floating regime may lead for high volatility of all economic variables as long as there is very active government intervention in to the foreign exchange market. (Yeyati and Sturzenegger (UTDT), 2000: 6)

When we consider the characteristics, advantages and disadvantages of the managed floating exchange rate system, we can conclude that by realizing the regime, nations can affect their BOP account positively on one hand and they can reduce the risk of financial speculation on the other hand. Since the system enables countries to occasionally intervene in to the market and set the exchange rate according to the trading partners, the probability of that particular nation to get a better BOP account is high.

2.1.7. Benefits of currency devaluation

- **Increase the Demands for Domestic Produced Goods**

Traditional views in macroeconomics such as Keynesians approach emphasize the expansionary effects of devaluation to output and growth. In this approach output is determined by aggregate demand and devaluation will have positive effect by simulating aggregate demand and output. Devaluation was expected to encourage the production of exportable commodities by shifting resources from non-tradable to tradable (Taye, 1999). Genye (2011) does a discussion on the positive effect of devaluation as it can have the expansionary effects to output and growth. De-valuation has an expansionary effect through "expenditure switching and reducing effect". Also when there is devaluation in a country the price of imported goods will increase whereas the price of domestic goods will decrease which in turn will increase the export of goods.

- **Encourage Competitive Market**

Devaluation can bring growth through improvements in price competition (Harris, 2001). According to his discussion, may have led to firms to shift resources from productivity enhancement to output expansion by the reduction in relative their price and would cause profit maximizing firms. As cost of imported goods increase people will shift to domestic goods. Thus increase opportunity to the foreign market and the increase in the consumption of domestic as a result of devaluation will reduce the cost of production (Genye, 2011). Therefore producers will provide cheaper price that can enable them to increase their profit and become competitive in the market and growth.

- **Encourage investment- led growth**

(Paul, 2006) provided a support for the positive effects of devaluation on economic growth on firms that produce both in the local and foreign market. When a currency is devaluated the amount of profit gained by a firm producing in the foreign market increases when converted to the local currency. This increase in profit can be used for the development of the R& D as well as innovations of new technologies. Finally the improvement and introduction of new technologies through profit will decrease their previous cost used which in turn increase output. (Gala, 2007) also made a similar argument with investment. He added the increase in export sector and innovations will lead to "investment- led growth" .This rise in investments will result in growth in GDP.

- **Encourage Local Material Producers And Suppliers**

In the manufacturing industry, devaluation provides positive effects on economic growth on local manufacturers that produce both in the local and foreign market. It gives an advantage for local material and equipment manufacturers and suppliers to grow and expand in the local market. The amount of profit gained by a local company producing in the foreign market will increase when currency is devaluated and converted to the local currency.

This increase in profit can be used for the development of research as well as innovations of new technologies. Finally the improvement and introduction of new technologies through profit will decrease their previous cost used which in turn increases output. In this context devaluation will encourage the manufacturing industry in the developments of local investments toward material

and equipment suppliers. Hence these developments will create more employment and supply chain in the manufacturing industry.

- **Control Economic Depreciation**

Devaluation can also be used as one means of increasing growth by stabilizing the economy by increasing exports and improving the current account as well controlling overvaluation of the exchange rate that increases import of goods (Genye, 2011).

2.1.8. Costs of currency devaluation

Despites its expansionary effect devaluation of currency has a negative impact on the growth of a country. (Krugman & Taylor, 1978) mentioned devaluation will induce an increase in profits share of GDP having a negative effect on aggregate demand if the saving propensity of firms and capital owners is higher than for wage earners.

For a country that is highly dependent in the non-tradable sector devaluation can have a negative impact. The distribution of resource from the profit gained in the exposed sector to the non-exposed sector and the cost of price for imported goods used for production will not be proportional. Due to this, the unexposed sectors as well as the total output growth will lose. (Goldberg, 1990; Stryk et al, 2000)

Devaluation can result in high profit for firms that are exposed to the market. But sometimes this high profit will make firms idle if there is less competition, favorable situation and finally result in no change in the long run. According to the theory of transformation firms will increase their productivity and become more creative when there is high competition, sudden fall in the demand of products or an increase production cost and result in a low profit (Erixon, 2007).

The increase in price of goods as a result of devaluation may decrease the total money in circulation (real money). Devaluation will push the interest rate up wards and decrease the aggregate demand ceteris paribus. Domestic firms that use bank loan for production will also be affected as a result of the increase in the interest rate. For countries that borrow money and are highly in debt, the increase in interest rate together with devaluation of currency will make situations even worse as the amount will increase. (Bird &Rajan, 2003; Domac, 1997)

Countries that use devaluation as one strategy for growth and provide low price in the foreign market may at the end get a zero profit in the long run. This is true for developing countries specially those who are new comers to the world market and devalue their currency with respect to the developed ones, are usually highly in debt. So the gain through lower price will be offset by the increase in the amount of debt in foreign currency which will be more expensive if the country devaluate its currency and will result in stagnancy in the economy. (Blecker & Razmi, 2007)

Devaluation of currency in a country where there is a wage indexation may have contractionary effect. When the price of goods increase as a result of devaluation of currency the real wage will fall and producers will be forced to increase the wage rate in order to make workers attain sustainable rate of living cost. This will decrease the profit of producers as their cost will increase (Acar, 2000).

The study also shows that the result of anticipated and unanticipated devaluation might have different effects on the long run growth rate. (Serven & Solimano, (1992) suggested that expected devaluation can have a negative effect on the growth of an economy. The increase in the depreciation of real exchange rate is one factor for the increase in the interest rate. And when investors expect the rise in the depreciation rate they will not be willing to invest and this will retard investment and hamper growth in the long run. (Courchene, (2002) also added anticipated devaluation will decrease the rate of technology and discourage innovation in investment as investors expect the increase in the price of imported inputs. Whereas when companies don't expect devaluation they won't fear anything so they will invest and it will not have effect on the investment rate. According to (Serven, (1990), basic costs the country faced from currency devaluation, can be generalized as the following issues and the reason why Ethiopia faced these problems due to currency devaluation. These are:

- Inflation. Devaluation is likely to cause inflation because: Imports will be more expensive (any imported good or raw material will increase in price), Aggregate demand increases causing demand-pull inflation and Firms/exporters have less incentive to cut costs because they can rely on the devaluation to improve competitiveness. The concern is in the long-term devaluation may lead to lower productivity because of the decline in incentives.
- Reduces the purchasing power of citizens abroad.

- A large and rapid devaluation may scare off international investors. It makes investors less willing to hold government debt because it is effectively reducing the value of their holdings.
- If consumers have debts, e.g. mortgages in foreign currency – after devaluation, they will see a sharp rise in the cost of their debt repayments.

2.2. Empirical literature review
2.2.1. The case of developing countries

The existing partial analyses on the effects of devaluation on real economic activities are mixed, some suggest expansionary effects and others contractionary effects.

Connolly (1983) analyzed the effect of a nominal exchange rate on the rate of economic growth. The coefficient obtained was positive and marginally significant, providing some support to the hypothesis of expansionary devaluation.

The study by (Gylfason and Risager, (1984) using the imputed parameter data, suggests that devaluations are generally expansionary in developed countries and likely to be contractionary in developing countries. The reason behind the contractionary devaluation in developing countries is the rise in the prices of imported intermediate products. This causes a decline in aggregate demand in the economy in both final consumption and intermediate consumption. Furthermore, this contraction is also reinforced by debt servicing. This is due to the price effect of devaluation. In the case of developed countries, this contraction also applies, but the force to raise aggregate demand is strong as well. The developed countries are able to reap the benefit of devaluation by export growth which they can enjoy with a fuller utilization of their production potential. On the other hand, developing economies face the resource crunch rather than enjoy the widened foreign markets when they undergo contraction. Likewise, the simulation model of (Gylfason and Radetzki, (1985) suggested that devaluation results in a decline in output and the extent of contraction increases in the presence of indexed wages.

Christopoulos (2004), using panel data unit root tests and panel co-integration tests, examined the effect of currency devaluation on output expansion in a sample of 11 Asian countries over the period 1968–1999. The results suggest that, in the long run, output growth is affected by currency devaluation in the majority of countries in the panel as a whole. This finding stands at

variance with other recent studies, which concluded that devaluation does not exert any important influence on aggregate output.

In the distributional ground, Ripoll (2004) demonstrates that in the long-run real devaluation redistributes income towards unskilled labor, while real appreciation favors skilled labor.

Miteza (2006) tests the effect of devaluation on output in a group of five transition economies: Poland, Hungary, Czech Republic, Slovakia, and Romania. The researcher used panel unit root and panel co-integration test. Based on the results, devaluation has a contractionary effect on output in the long run.

Narayan & Narayan (2007) used the bounds testing approach to co-integration to investigate the relationship between devaluation and output for Fiji. Accordingly, they supported the IMF strategy that encourages the devaluation of the domestic currency to increase economic growth. Their study on Fiji indicated that 10% devaluation of currency increased output with 2.3% and 3.3% in the short and long run respectively. Likewise, a 10% increase in money supply increases output by 2.3 and 3.4%, in the short run and long-run respectively. Thus, devaluation has a similar and equal effect on output as an increase in money supply.

Ramly and Haleim (2008) studied the effect of devaluation on output in the Egyptian economy using annual data for Egypt over the period 1982-2004 by applying a VAR model. The results of the study indicate that devaluations have contractionary effects on output in the short run, whereas the effects are expansionary in the long run.

Galebotswe and Andria (2011) tried to test the contractionary devaluation hypothesis in the context of a small open import-dependent economy using an error-correction model. They found that currency devaluations are contractionary in the long run and expansionary in the short-run.

In addition to the partial analysis mentioned above, some general equilibrium analyses of the effects of devaluation are also available.

The study by Branson (1986) supports the findings of Gylfason and Risager (1984) which have been discussed earlier. On the other hand, Taylor and Rosensweig (1984), using a large computable general equilibrium (CGE) model for the Thai economy, simulated the effect of a 10% devaluation of the Bhatt in real exchange and demonstrated an increase in real output by 3.3%. A more comprehensive study in this regard was conducted by Edwards (1986). This study, using the data of 12 developing countries for the period 1965–1980, showed that the immediate effect of devaluation is contractionary, after one year it is expansionary, and in the long run it is

neutral. A similar finding was reported by Upadhyaya (1999). He estimated the effect of currency devaluation on the aggregate output level in six Asian countries. The estimated results suggest that devaluation, in general, is neutral in the long run. Upadhyaya et al. (2004) studied the effect of currency depreciation using panel data and found that while the exchange rate depreciation is expansionary in the short run, it is neutral in the medium and long run.

Wobst (2001) used a computable general equilibrium model of the Tanzanian economy to analyze the importance of an exchange rate devaluation to eliminate the existing trade deficit through export-oriented economic growth. He finds that currency devaluation benefits agricultural more than industrial sectors. The elimination of the trade deficit through devaluation has to come from the export side.

Lay et al. (2004), in their analysis of the effects of major external shocks and policy reforms of Bolivia to achieve pro-poor growth, concluded that the shocks have not only contributed to the economic crisis, but that they are also likely to impair Bolivia's medium-term development prospects, leading to marked increases in both urban and rural poverty. If the reform projects were implemented, their impact on growth would be large enough to slightly over compensate the impact of the negative external shocks. The poverty increase caused by the shocks would be more than offset for urban households but reinforced for rural households.

Fagernäs (2004) examined the likely income distribution impacts of alternative policy instruments for stabilizing the economy, specifically for eliminating the current account deficit, viz. devaluation or fiscal adjustment. This paper shows that devaluation is likely to be contractionary for GDP in all sectors except agriculture and export-oriented sectors. Profits and labor incomes in a commercial farming rise, but fall in other sectors.

Acharya (2010) measured the Potential impacts of the devaluation of Nepalese currency on growth, distribution, price changes in factor and product markets, and on selected macroeconomic features using a Computable general equilibrium approach. To this typical developing economy, they found that devaluation is expansionary but mostly benefits the rich, thus leading to a more uneven income distribution. They also found that devaluation causes an improvement in saving, investment and export-import ratios, whereas the budget deficit widens.

Siddig (2011) applied a computable general equilibrium model to investigate the possible economy-wide effects of devaluating the overvalued Sudanese pound as per the IMF

recommendation. The results show that devaluation of Sudanese pound reduces absorption, private consumption, total imports, and GDP; while improving exports.

Eltalla (2013) analyzed the impacts of the devaluation on the Palestinian economy using a computable general equilibrium model. They investigate the effect of a15% devaluation of the exchange rate on output growth of Palestine. They found that a 15% devaluation of the exchange rate results in a lower real gross domestic product, lower import and low export, lower private consumption and higher inflation. Overall devaluation has a contractionary effect on the Palestinian economy.

Furthermore various empirical studies have tested the effect of devaluation in the short and long run growth. Most of the results confirmed that devaluation has contractionary effect in the short run and zero or no effect in the long run growth. (Edwards, 1986) studied 12 developing countries based on a hypothesis about a negative effect of devaluation. He used the lagged variable to differentiate the effect of exchange rate in the short and long run. The result showed devaluation of the exchange rate in the same year has a negative effect in the short run. But after one year the effect was reversed and resulted in a positive relation. In the long run according to the author this conflicting effects will cancel each other and result in zero effect in the long run. (Acar, 2000) also used the lagged variable as additional variable to test the relation between growth and devaluation. He took sample of 18 LDC"s with different export performance. His result however showed a negative relation between devaluation of currency and output only during the first year, a positive effect the next year and zero growth in the long run as the two effects cancel out in the future. Even though (Edwards, 1986) and (Acar, 2000) got the same result the countries used in the sample as well as the functional form of the dependent and independent variables used in their study is different.

2.2.2. Empirical studies from Ethiopia

The empirical studies regarding the effects of devaluation on the economy that focuses on Ethiopia have been very limited.

Haile (1994) has attempted to estimate the effect of devaluation on the trade balance using the elasticity approach. According to him, the sum of elasticity's of export and import is greater than one. Since the Ethiopian trade balance was initially in deficit the Marshal-Learner condition is

not satisfied and is not enough. He concluded that although devaluation has an inflationary potential, it will have at least a positive effect on the trade balance.

Befekadu and Kibre (1994) in their study on the possible effect of the 1992 devaluation on the Ethiopian trade balance, argued that in the short-to-medium term both imports and import substitute goods are unlikely to respond to price changes given the structure of the Ethiopian economy. According to them if devaluation of birr succeeds in decreasing imports, it is likely to reduce capacity utilization and therefore output growth. Thus, the decrease in the current account deficit would be at the cost of the growth of the economy. For them, though the increases in domestic currency prices are necessary, they are definitely not sufficient to increases the volume of exportable. Furthermore, they argued that the greater foreign exchange availability from higher exports and from easier access to foreign capital made it possible to translate the increase in demand into actual imports.

According to (Lencho, 2010) the appreciation of Ethiopian currency (birr) results deterioration of the nation's export and there is a positive relation between GDP and export therefore, whenever the domestic currency got appreciated, both export and GDP would deteriorate in contrary when the domestic currency got depreciated, the nation's GDP would be better off.

Furthermore, by using vector auto-regression techniques (Ayen, 2014) stated that , devaluation is contractionary and leads the national's output to decrease in the long run due to the fact that, whenever devaluation implemented in the economy as a monetary policy, the cost of imported factors of productions get more higher and since Ethiopia primarily imports petroleum and other factors of productions (machineries) for production purposes, an increase in the cost of production discourages producers from producing more outputs therefore, in the long run the nation's output level will decrease.

2.3. Conceptual framework

Figure 2.3: conceptual framework
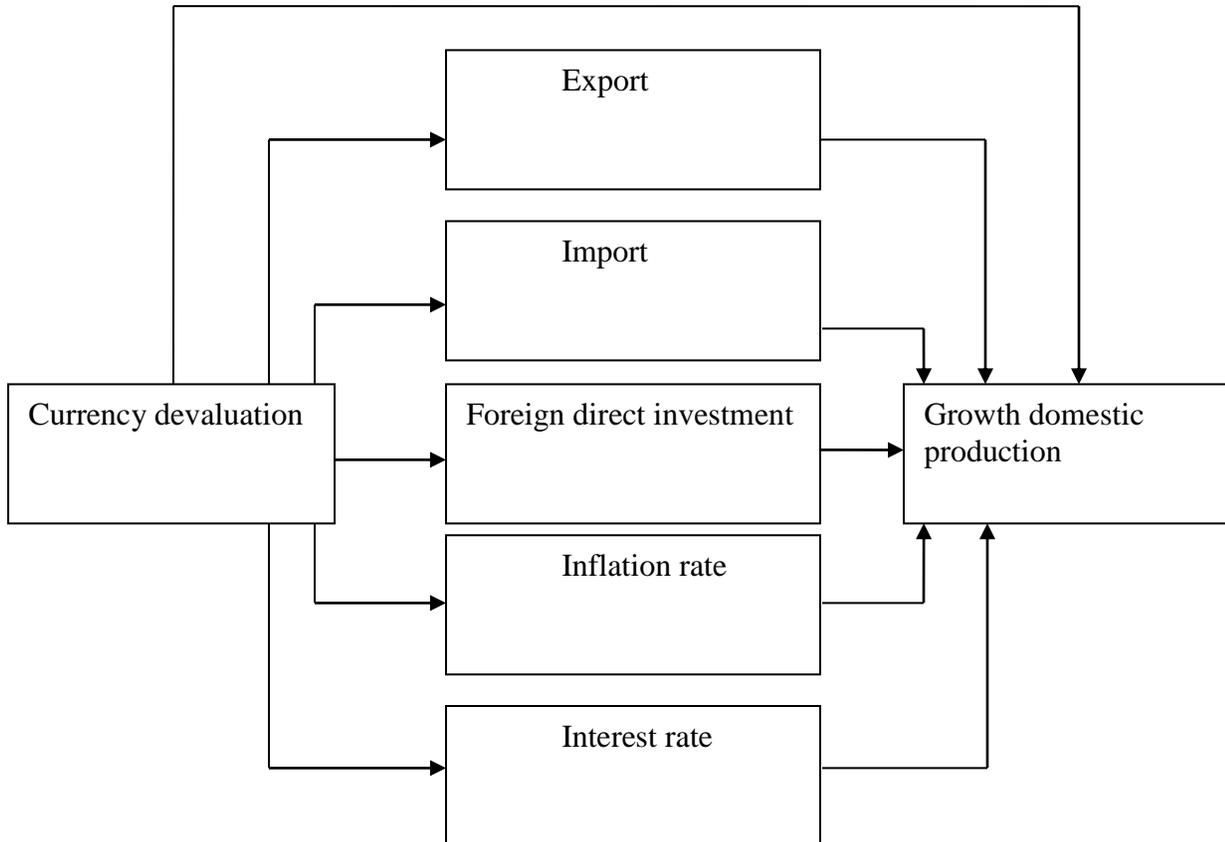
Source: author, 2019

CHAPTER THREE

RESEARCH METHODOLOGY

3.1.   Research approach and design

The research approach in the study was chosen based on the purpose and the research questions set out to be addressed. According to Creswell (2003, p.13-15) there are three basic types of research approaches, quantitative, qualitative, and mixed approach**.** In the quantitative method, data are collected through a structured survey approach. In quantitative research it is possible to compare and study several determinants and analyzing and testing them empirically will prove if there are relationships to be found in order to draw conclusions on the research. Qualitative methods have an emphasis on understanding, interpreting and observing the data in a natural setting and with a sort of insider's view (Kothari, 2004). Quantitative approach is more objective than qualitative approach which is more of the subjective method. The mixed approach inquirers draw liberally from both quantitative and qualitative assumptions. That means it is the combination of the two methods.

This research paper was interested to identify and analyze the associations between the dependent variable, i.e. economic growth measured by GDP, the independent variable that is currency devaluation and intervening variables that are export, import, inflation rate, FDI, and interest rate. So, quantitative approach is more appropriate to fulfill the purpose of this research, since this paper was searching for what factors were affecting economic growth of Ethiopia due to currency devaluation, because of the fact that those variables can be easily quantified. On the other hand the quantitative method was used to measure the relationship between those variables and with the quantitative method it is possible to compare different numerical growth measures.

This research paper was designed with a Causal research, also called explanatory research. It is the investigation of (research into) cause-and-effect relationships. To determine causality, it is important to observe variation in the variable assumed to cause the change in the other variable(s), and then measure the changes in the other variable(s). Other confounding influences (is a variable that influences both the dependent variable and independent variable causing a spurious association.) must be controlled for so they don't distort the results, either by holding them constant in the experimental creation of data, or by using statistical methods (Wikipedia,

the free encyclopedia). In this research paper statistical method was used to measure variation in the variable assumed to cause the change in the other variable(s).

3.2.   Instruments of data collection

The research process was started by collecting secondary data about all variables that has declared in this research paper including economic performance situation in Ethiopia and the data was critically tested and reviewed before using for analysis purpose. Then it was evaluated critically in order to analyze the relationship between the research variables.

Quantitative part of this data is dependent on secondary data so that, data were collected by going in person from the major sources of data namely CSA, MOFED, and NBE and formally collecting it from them and electronically through email.

3.3.   Variable definition, sources of data and Procedures of data collection
3.3.1. Variable definition

A variable is something you're trying to measure. It can be practically anything, such as objects, amounts of time, feelings, events, or ideas. In this paper, there are one dependent variable, one independent variable, and five intervening variables.

- Dependent variable: - A dependent variable is the variable being tested in a scientific experiment. The dependent variable is 'dependent' on the independent variable. As the experimenter changes the independent variable, the change in the dependent variable is observed and recorded. When you take data in an experiment, the dependent variable is the one being measured. This paper has one dependent variable called GDP. GDP is one of the primary indicators used to gauge the health of a country's economy. It represents the total dollar value of all goods and services produced over a specific time period, often referred to as the size of the economy. Usually, GDP is expressed as a comparison to the previous quarter or year. For example, if the 2017 GDP of a country is up 3%, the economy of that country has grown by 3% over the third quarter. While quarterly growth rates are a periodic measure of how the economy is faring, annual GDP figures are often considered the benchmark for the size of the economy (Kenton, 2018).

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- Independent variable: - An independent variable is the variable that is changed or controlled in a scientific experiment to test the effects on the dependent variable. This paper has one independent variable called currency devaluation.

  Devaluation refers to a decrease in a currency's value with respect to other currencies. A currency is considered devalued when it loses value relative to other currencies in the foreign exchange market. A currency's devaluation is the result of a nation's monetary policy (Sharma, 2015).

- Intervening variable: -An intervening variable is the variable that causes mediation in the dependent and the independent variables. In other words, it explains the relationship between the dependent variable and the independent variable. The process of complete mediation is defined as the complete intervention caused by the mediator variable. The mediation caused by the mediator variable is developed as a mediation model. This model that develops due to the mediation is a causal model. In other words, this means that the mediator variable has been assumed to cause the affect in the outcome variable and not vice versa. Baron and Kenny (1986) have given steps for conducting meditational hypotheses. A variable plays a role on the mediator variable under some specific conditions. The conditions of being the mediator variable are as follows: If the change in the level of the independent variable significantly accounts for variation in the other variable, then the variable is considered a mediator variable. If the change in the other variable significantly accounts for the variation in the dependent variable, then the other variable is considered a mediator variable. If the other variable strongly dominates the significant relationship between the dependent and the independent variable, then the other variable is termed as a mediator variable. In other words, if the relationship between the dependent and the independent variable no longer exists and their variations are controlled by some other variable, then that variable is termed as the mediator variable. In general, the mediation model examines the relationship between the dependent variable and the independent variable, the relationship between the independent variable and the mediator variable and the relationship between the dependent variable and the mediator variable. If the mediator variable is measured with less than perfect consistency, then the effects caused are likely to be biased. In other words, the effect of the mediator variable is likely to be underestimated and the effect of the independent variable on the dependent variable is likely to be overestimated. This bias in the variation of the variable is

generally due to measurement error. An Instrumental variable is then used to solve this problem of bias in the variability of the mediator variable. If this approach does not work, then the researcher working on the mediator variable is required to explain that since the reliability of the intervening variable is very high, the bias caused is fairly minimal. If the mediation caused by the mediator variable is perfect in nature, then the independent variable and the mediator variable are correlated to each other. This correlation between the mediator variable and the independent variable is termed as co linearity. If the independent variable explains all the variation caused by the mediator variable, there will not be any unique variation that would explain the dependent variable, and this will thus result in multi co linearity. Multi co linearity is generally expected in the meditational analysis of the mediator variable and the dependent and the independent variable, and therefore it cannot be avoided by the researcher. (Newsom, 2018)

This research paper has five intervening variables. These are:

- Export: - Selling of products or services to customers located abroad from a base in the home country. The exports of Ethiopia and other countries are calculated as the total amount of goods and services produced at home and sold abroad. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services. (The World Bank, 2017)

- Import: - Procurement of products or services from suppliers located abroad for the consumption in the home country. Imports of goods and services represent the value of all goods and other market services received from the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services. (The World Bank, 2017)

- Inflation rate: -Inflation rate is the percentage at which a currency is devalued during a period. This is devaluation is evident in the fact that the consumer price index (CPI) increases during this period. In other words, it's a rate at which the currency is being devalued causing the general prices of consumer goods it increase relative to change in currency value. Inflation can be caused by many different events and circumstances, but the most common is

an increase in the money supply. As a floating currency is becomes more abundant, its value starts to decline. This makes sense because it isn't as scarce as it once was. (IMF, 2018)

- Foreign direct investment (FDI):- FDI is when a company owns another company in a different country. FDI is different from when companies simply put their money into assets in another country what economists call portfolio investment. With FDI, foreign companies are directly involved with day-to-day operations in the other country. This means they aren't just bringing money with them, but also knowledge, skills and technology. A lot of economists really like FDI, especially when it's flowing from rich countries into poorer countries. The idea is that when international companies come in, they can either shake up an existing industry, because they're bringing competition for the domestic companies that already exist, or can create entirely new industries. FDI can also strengthen local economies by creating new jobs and boosting government tax revenues. (The World Bank, 2017)

- Interest rate: - Like any other commodity, money has a price. The price of money is known as the interest rate. For a saver, interest is the return that is received for money deposited in banks or credit institutions. This interest is the price that the banks or credit institutions pay savers for using their money to on-lend to individuals or businesses. For a person borrowing, interest is the extra amount that is paid to lending institutions for borrowing money from them. In other words, when repaying a loan the borrower pays the amount borrowed (known as the principal) plus some extra money (which is the interest) to the lending institution for using their funds. The rate of interest that is offered by financial institutions affects peoples' decisions on whether to save or spend their money. Usually, when interest rates are high people tend to save or deposit more of their money. By doing so, consumers are postponing their current spending to a later date i.e. keeping money aside for future spending. Additionally, when interest rates are elevated, people tend to borrow less since it costs more to take out loans today and means lower spending in the future when the loans fall due. Businesses operate the same way, as higher interest rates will raise their business costs and reduce the incentive for borrowing .The decisions by savers and borrowers affect consumption and investment decisions, and ultimately aggregate demand and overall economic activity. If interest rates are high, people are expected to spend less. More money will go into saving and less will be borrowed for spending on consumption and investment. Conversely, if interest rates are low, individuals and businesses save less as their return on

deposits will be low. They are likely to borrow more as the cost of borrowing is cheaper. Consequently, there will be more spending that will boost economic activity. (The World Bank, 2017)

3.3.2. Sources of data

To enhance the quality of data, this research paper was used secondary data. According to Kothari, (2004) depending on the sources and techniques ones use for gathering data it can be divided into primary and secondary data. He go by saying that primary data is data collected by using techniques like interviews, questionnaires and tests. On the other hand secondary data refers to documents that have been organized before.

The data required to conduct this research was collected from documents of the respective government offices. It was collected from, National Bank of Ethiopia, Central Statistics Agency, and Ministry of Finance and Economic Development to check the level of Ethiopian economic growth and the amount and percentage of independent and intervening variables in the country. As most of the data was collected from secondary data, the recall problem related with primary data was totally eliminated. The secondary data has received from records of those institutions to attain the research objectives. It has helped me to answer questions directly related to the level of economic growth of Ethiopia in each year and the amount of independent and intervening variables in the country. As a result of this the main sources of data was documentary sources like annual reports produced by central statistics agency, national bank of Ethiopia, and ministry of finance and economic development. World Bank annual country reports, International monetary fund annual and interim reports and related websites was also be related secondary sources to attain the research objectives. Since most of the data was secondary data, the correctness and validity of the data was checked by referring to different sources but the main source or the base line was countries official own produced reports. In this research paper, 27 years' time series data of a country was used as a source of secondary data.

Benefits derived by using secondary data for the researchers generally for saving of time (Ghauri, 2005), Accessibility of data, saving of money (Ghauri, 2005), Feasibility of both longitudinal and international comparative studies and Generating new insights from previous

analyses (Fàbregues, 2013) with some limitations. According to Koul (2006) using appropriate data collection techniques help researchers to combine the strengths and amend some of the inadequacies of any source of data to minimize risk of irrelevant conclusion.

3.3.3. Procedures of data collection

The following are the major procedures that have been followed to collect secondary data relevant to attain the research objectives. These are:-

➢ Gathering secondary data from the officials it has the data required to conduct this research successfully.

➢ Gathering supplementary data from publications and published theoretical literatures and empirical studies.

➢ Gathering any other related data form websites via internet.

➢ Checking the data through the following characteristics before using it. these are:-

➢ Checking suitability of data: - The desirable and undesirable qualities of data are determined by its intended use or purpose. High quality exists when the data is well suited to its purpose, while poor quality occurs when data is not well suited to its use (even if the data is free of errors). So that, suitability of data was checked before using it.

➢ Checking adequacy of data: - the data is considered inadequate if the level of adequacy achieved in data is found inadequate or if they are related to an area which may be either narrower or wider than the area of the present enquiry. So that, the data was checked whether it's adequate or not before using it.

3.4. Methods of data analysis

In order to analyze the research data, mediation analysis with multiple regressions was used to check the relationship between dependent and independent variables with the mediating role of the intervening variables by using software. That means the research data was analyzed and processed by conducting mediation analysis using SPSS software version 24 customized with process macro version 33. Mediation analysis with multiple regression was conducted to analyze each hypothesis has developed in order to check whether there is a significant relationship

between the stated variables or not. Due to the presence of intervening variables, it requires to test both the direct and the indirect effects between the variables.

Mediation is a hypothesized causal chain in which one variable affects a second variable that, in turn, affects a third variable. The intervening variable, M, is the mediator. It "mediates" the relationship between a predictor, X, and an outcome variable Y. Graphically, mediation can be depicted in the following way:

Figure 3.1: diagrammatic representation of mediation model
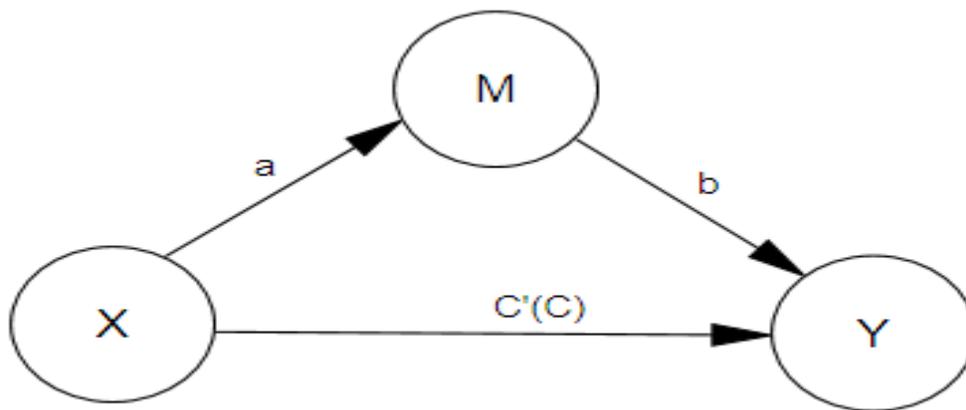
Paths a & b are called direct effects. The meditational effect in which X, leads to Y through M, is called the indirect effect. The indirect effect represents the portion of the relationship between X and Y that is mediated by M.

Baron and Kenny (1986) proposed a four step approach in which several regression analyses are conducted and significance of the coefficients is examined at each step for each hypothesis has develop in order to analyze and test the relationship between the variables. Mediation analysis requires testing the direct and the indirect effects between variables. In other words each research hypothesis needed to be tested through mediation analysis in order to test whether there is a significant relationship between variables or not.

In this section of the research paper, mediation models have developed for each research hypothesis.

- **Mediation model for hypothesis one**

As the researcher has represented the diagram and table below, the mediation model has developed for both the direct and the indirect effect between variables.

Table 3.1: The direct effect model for hypothesis one

	Testing the direct effect for hypothesis one
Step 1	Conduct a simple regression analysis with X predicting Y to test for path c alone, $Y = B_0 + B_1 X + e$
Step 2	Conduct a simple regression analysis with X predicting M to test for path a, $M = B_0 + B_1 X + e$
Step 3	Conduct a simple regression analysis with M predicting Y to test for path b alone, $Y = B_0 + B_1 M + e$
Step 4	Conduct a multiple regression analysis with X and M predicting Y, to test for path C', $Y = B_0 + B_1 X + B_2 M + e$

As the researcher has represented in the above table, step 1 show that the causal variable is correlated with the outcome. Use Y as the criterion variable in a regression equation and X as a predictor (estimate and test path *c* in the above figure). This step establishes that there is an effect that may be mediated. The next step Show that the causal variable is correlated with the mediator. Use M as the criterion variable in the regression equation and X as a predictor (estimate and test path *a*). This step essentially involves treating the mediator as if it were an outcome variable. The third step shows that the mediator affects the outcome variable. Use Y as the criterion variable in a regression equation and X and M as predictors (estimate and test path *b*). It is not sufficient just to correlate the mediator with the outcome because the mediator and the outcome may be correlated because they are both caused by the causal variable X. Thus, the causal variable must be controlled in establishing the effect of the mediator on the outcome. And finally the fourth step will establish that M completely mediates the X-Y relationship, the effect of X on Y controlling for M (path *c'*) should be zero (see discussion below on significance testing). The effects in both Steps 3 and 4 are estimated in the same equation.

Assuming there are significant relationships from Steps 1 through 3, one proceeds to Step 4. In the Step 4 model, some form of mediation is supported if the effect of M (path b) remains significant after controlling for X. If X is no longer significant when M is controlled, the

finding supports full mediation. If X is still significant (i.e., both X and M both significantly predict Y), the finding supports partial mediation so it requires to calculate indirect effect in order to find the full mediation result. The regression coefficient for the indirect effect will represent the change in Y for every unit change in X that is mediated by M. To calculate the indirect effect; Sobel Product of Coefficients Approach has been applied by multiplying two regression coefficients (Sobel, 1982). The two coefficients were obtained from two regression models. This approach has been used to develop model for each hypothesis and to test the significance of the variables relationship.

Table 3.2: The indirect effect model for hypothesis one

Sobel Product of Coefficients Approach	
	Testing the indirect effect for hypothesis one
Model 1	$Y = B_0 + B_1 X + B_2 M + e$
Model 2	$M = B_0 + B X + e$

When calculating the indirect effect by sobel product of coefficients approach, two regression models was developed. In the Sobel approach, Model 2 involves the relationship between X and M. A product is formed by multiplying two coefficients together, the partial regression effect for M predicting Y, *B2*, and the simple coefficient for X predicting M, *B*: $B_{indirect} = (B_2)(B)$

Where Y= growth domestic product (GDP)

B_0=Y intercept

B_1= slope of currency devaluation as a proxy of measuring economic growth

X = currency devaluation

B_2=slope of annual inflation rate as deflator of GDP

M = annual inflation rate as deflator of GDP

e =Error variable

- **Mediation model for hypothesis two**

As the researcher has represented the table below, the mediation model has developed for both the direct and the indirect effect between variables.

Table 3.3: The direct effect model for hypothesis two

	Testing the direct effect for hypothesis two
Step 1	Conduct a simple regression analysis with X predicting Y to test for path c alone, $Y = B_0 + B_1 X + e$
Step 2	Conduct a simple regression analysis with X predicting M to test for path a, $M = B_0 + B_1 X + e$
Step 3	Conduct a simple regression analysis with M predicting Y to test for path b alone, $Y = B_0 + B_1 M + e$
Step 4	Conduct a multiple regression analysis with X and M predicting Y, to test for path C', $Y = B_0 + B_1 X + B_2 M + e$

As the researcher has discussed above, the same steps was conducted for testing hypothesis two.

Table 3.4: The indirect effect model for hypothesis two

	Sobel Product of Coefficients Approach
	Testing the indirect effect for hypothesis two
Model 1	$Y = B_0 + B_1 X + B_2 M + e$
Model 2	$M = B_0 + B X + e$

When calculating the indirect effect by sobel product of coefficients approach, two regression models was developed for hypothesis two. In the Sobel approach, Model 2 involves the relationship between X and M. A product is formed by multiplying two coefficients together, the

partial regression effect for M predicting Y, *B2*, and the simple coefficient for X predicting M, *B*: $B_{indirect} = (B_2)(B)$.

Where Y= growth domestic product (GDP)

B_0=Y intercept

B_1= slope of currency devaluation as a proxy of measuring economic growth

X = currency devaluation

B_2=slope of annual growth rate of FDI (net inflows)

M =annual growth rate of FDI (net inflows)

e =Error variable

- **Mediation model for hypothesis three**

As the researcher has represented the table below, the mediation model has developed for both the direct and the indirect effect between variables.

Table 3.5: The direct effect model for hypothesis three

	Testing the direct effect for hypothesis three
Step 1	Conduct a simple regression analysis with X predicting Y to test for path c alone, $Y = B_0 + B_1X + e$
Step 2	Conduct a simple regression analysis with X predicting M to test for path a, $M = B_0 + B_1X + e$
Step 3	Conduct a simple regression analysis with M predicting Y to test for path b alone, $Y = B_0 + B_1M + e$
Step 4	Conduct a multiple regression analysis with X and M predicting Y, to test for path C', $Y = B_0 + B_1X + B_2M + e$

As the researcher has discussed above, the same steps was also been conducted for testing hypothesis three.

Table 3.6: The indirect effect model for hypothesis three

	Sobel Product of Coefficients Approach	
	Testing the indirect effect for hypothesis three	
Model 1	$Y = B_0 + B_1 X + B_2 M + e$	
Model 2	$M = B_0 + B X + e$	

When calculating the indirect effect for hypothesis three, it requires developing two regression models. Model 2 involves the relationship between X and M. A product is formed by multiplying two coefficients together, the partial regression effect for M predicting Y, *B2*, and the simple coefficient for X predicting M, *B*:$B_{indirect} = (B_2) (B)$

Where Y= growth domestic product (GDP)

B_0=Y intercept

B_1= slope of currency devaluation as a proxy of measuring economic growth

X = currency devaluation

B_2=Slope of Annual saving interest rate

M =Annual saving interest rate

e =Error variable

- **Mediation model for hypothesis four**

As the researcher has represented table below, the mediation model has developed for both the direct and the indirect effect between variables.

Table 3.7: The direct effect model for hypothesis four

	Testing the direct effect for hypothesis four
Step 1	Conduct a simple regression analysis with X predicting Y to test for path c alone, $Y = B_0 + B_1 X + e$
Step 2	Conduct a simple regression analysis with X predicting M to test for path a, $M = B_0 + B_1 X + e$
Step 3	Conduct a simple regression analysis with M predicting Y to test for path b alone, $Y = B_0 + B_1 M + e$
Step 4	Conduct a multiple regression analysis with X and M predicting Y, to test for path C', $Y = B_0 + B_1 X + B_2 M + e$

The four step mediation analysis was conducted in order to test the direct effect for hypothesis four as it has conducted for the other hypothesis.

Table 3.8: The indirect effect model for hypothesis four

	Sobel Product of Coefficients Approach
	Testing the indirect effect for hypothesis four
Model 1	$Y = B_0 + B_1 X + B_2 M + e$
Model 2	$M = B_0 + B X + e$

In order to test the full mediation for hypothesis four, it requires conducting Sobel Product of Coefficients Approach. In the Sobel approach, Model 2 involves the relationship between X and M. A product is formed by multiplying two coefficients together, the partial regression effect for M predicting Y, *B2*, and the simple coefficient for X predicting M, $B : B_{indirect} = (B_2) (B)$

Where Y= growth domestic product (GDP)

B_0=Y intercept

B_1= slope of currency devaluation as a proxy of measuring economic growth

X = currency devaluation

B_2=Slope of annual growth rate of exports of goods and services

M =annual growth rate of exports of goods and services

e =Error variable

- **Mediation model for hypothesis five**

As the researcher has represented the diagram and table below, the mediation model has developed for both the direct and the indirect effect between variables.

Table 3.9: The direct effect model for hypothesis five

	Testing the direct effect for hypothesis five
Step 1	Conduct a simple regression analysis with X predicting Y to test for path c alone, $Y = B_0 + B_1 X + e$
Step 2	Conduct a simple regression analysis with X predicting M to test for path a, $M = B_0 + B_1 X + e$
Step 3	Conduct a simple regression analysis with M predicting Y to test for path b alone, $Y = B_0 + B_1 M + e$
Step 4	Conduct a multiple regression analysis with X and M predicting Y, to test for path C', $Y = B_0 + B_1 X + B_2 M + e$

As the researcher has discussed above, the same steps was also been conducted for testing hypothesis five.

Table 3.10: The indirect effect model for hypothesis five

	Sobel Product of Coefficients Approach	
	Testing the indirect effect for hypothesis five	
Model 1	$Y = B_0 + B_1 X + B_2 M + e$	
Model 2	$M = B_0 + B X + e$	

Two models were developed for hypothesis five in order to test its indirect effect. In the Sobel approach, Model 2 involves the relationship between X and M. A product is formed by multiplying two coefficients together, the partial regression effect for M predicting Y, *B2*, and the simple coefficient for X predicting M, $B : B_{indirect} = (B_2)(B)$

Where Y = growth domestic product (GDP)

B_0 = Y intercept

B_1 = slope of currency devaluation as a proxy of measuring economic growth

X = currency devaluation

B_2 = slope of annual growth rate of imports of goods and services

M = annual growth rate of imports of goods and services

e = Error variable

After calculating the significance of both the direct and the indirect effect, SPSS with process macro was used to analyze and process the data to verify and test each hypothesis. In the section of data analysis and interpretation, each variable was presented and discussed based of the results of mediation analysis related with the variables under study. In addition the following statistical values were seen and the conclusions were made based on these statistical values. These are:-

- **T-Statistic: -** Identify significant relationship between the stated variables.
- **F-Statistic: -** Testing the significance of variables that the researcher has selected to conduct this research paper.

- **Standard Error of Estimation: -** The objective is to identify whether a particular variable is significant at a certain level of confidence.

- **Beta Analysis (Coefficient):-** Beta analysis is a measurement used in order to find out the relationship between independent variables and dependent variable does exist or not. Therefore, if the result is positive that means the independent variables can explain the changes in the dependent variable.

- **Coefficient of Determination (R^2):-** The coefficient of determination is a statistic that will give information the goodness of fit of model. It is a statistical measure of how well the regression line approximates the real data points. Is a descriptive measure between zero and one, a value of R2close to 1 indicates that the model explains nearly all of the variability of the dependent variable about its mean value, while a value close to zero indicates that the model fits the data poorly.

- **Calculated p-value (significance value):-** Keep in mind that there is no magic significance level that distinguishes between the studies that have a true effect and those that don't with 100% accuracy. The common alpha value of 0.05 was used to compare the significance of the test. For a significance level of 0.05; expect to obtain sample means in the critical region 5% of the time when the null hypothesis is true. In these cases, you won't know that the null hypothesis is true but we'll reject it because the sample mean falls in the critical region. That's why the significance level is also referred to as error rate Significance levels and P values are important tools that help us to quantify and control this type of error in a hypothesis test. Using these tools to decide when to reject the null hypothesis increases our chance of making the correct decision. (Pearson et al, 1996)

  The P value, or calculated probability, is the probability of finding the observed, or more extreme, results when the null hypothesis (H_0) of a study question is true – the definition of 'extreme' depends on how the hypothesis is being tested. P is also described in terms of rejecting H_0 when it is actually true; however, it is not a direct probability of this state (Goodman, 1993).

  The term significance level (alpha) is used to refer to a pre-chosen probability and the term "P value" is used to indicate a probability that you calculate after a given study. If the P value is less than the chosen significance levels then reject the null hypothesis i.e. accept that your sample gives reasonable evidence to support the alternative hypothesis (Royal, 1997). In this

research 95% confidence interval was taken to check the significance of variables relationship.

CHAPTER FOUR

DATA ANALYSIS AND INTERPRETATION

In this chapter mediation analysis with multiple regressions was conducted, data was analyzed and discussed through descriptive statistics, multiple regression analysis and finally hypothesis result was presented.

4.1. Descriptive statistics

Descriptive statistics explains dependent variable GDP, five intervening variables called export, import, inflation rate, Foreign direct investment, and annual saving interest rate and independent variable devaluation in terms of mean (is the average and is computed as the sum of all the observed outcomes from the sample divided by the total number of events), median (is the middle score), maximum observation, minimum observation, standard deviation (is calculated by square rooting the variance of the data it gives a more accurate account of the dispersion of values in a dataset) and sum squared deviations (calculating the sum of squares) in the following table.

Table 4.1: Descriptive statistics result

	Dependent variable	Independent variable	Intervening variables				
	GDP	Devaluation	Inflation	FDI	Interest rate	Exports	Imports
Mean	7.441231	11.419231	9.830769	2.322885	5.772500	7.414077	13.341500
Median	9.524500	8.650000	10.150000	2.049500	5.250000	3.600000	14.050000
Maximum	13.5730	27.3000	33.5000	5.4640	11.5000	58.0000	68.1000
Minimum	-8.6720	2.8000	-5.8000	0.0020	2.8750	-11.2000	-20.5000
Std. Dev.	5.5951365	6.3318888	9.7214307	1.8668915	2.5833638	14.7538139	18.3653501
Sum Sq. Dev.	193.4720	296.9000	255.6000	60.3950	150.0850	192.7660	346.8790
Observations	27	27	27	27	27	27	27

Source: descriptive statistics result run by the researcher from SPSS

From the above statistics result the average performance of Ethiopian economy in percentage of GDP from 1992 to 2018 period found to be 7.44% which indicate the overall performance is positive. There was no big difference between the maximum total GDP percentage equals 13.57% in year 2004, and minimum total percentage of GDP equals -8.67% in year 1992 and the standard deviation for the sample period was small, Std.dev Value of 5.46. This result reveals that Ethiopia's economic growth performance is lower and not as planned by the government.

In the case of exchange rate depreciation from 1992 to 2018 period found to be 11.41% on average and there was a big difference between the maximum exchange rate depreciation equals 27.66% in year 2018 and minimum exchange rate depreciation equals 2.8% in year 1992 which indicate the existence of unfavorable fluctuation of exchange rate in the country and it explained by the standard deviation for the sample period was Value of 6.33.

In case of inflation measured by annual average rate of GDP deflator from 1992 to 2018 period found to be 9.83% on average which indicate the overall unacceptable rate in the economy. There were big difference between the maximum inflation rate 33.5 in year 2012 due to highly increase of food price in the year, and Minimum inflation rate equals -5.8 in year 2001 when the economy performs less. This shows country's inflation rate varies at high amount showing the economy was not stable explained by the standard deviation for the sample period was Value of 9.72.

In case of annual growth rate of foreign direct investment from 1992 to 2018 period found to be 2.32% which indicate low growth rate performance. There were no big difference between the maximum growth rate of foreign direct investment equals 5.46% in year 2016, and Minimum growth rate foreign direct investment equals 0.002% in year 1992 when there was no law and incentives to attract investors. This shows country's performance in attracting investors going well but the growth rate is not enough to bring sustainable development on Ethiopian economy. The standard deviation for the sample period was small, Std.dev Value of 1.86.

In the case of average saving interest rate growth from 1992 to 2018 period found to be 5.77% on average which indicate the low interest rate as compared to the rate of growth of country's inflation rate. There was no big difference between the maximum saving interest rate of 11.5% in year 2018 and Minimum saving interest rate equals 2.87% in year 1992. This shows country's saving interest rate is stable with standard deviation for the sample period of Value of 2.58.

In the case of annual growth rate of export from 1992 to 2018 period found to be 7.41% on average which indicate the overall low performance in the economy. There was big difference between the maximum annual growth rate of exports equals 58% in year 2004 and minimum exports growth rate equals -11.2% in year 2015 when the economy performs less. This shows country's performance in international trade was not good and percentage is fluctuating at high amount explained by the standard deviation for the sample period was Value of 14.75.

In the case of annual growth rate of imports from 1992 to 2018 period found to be 13.34% on average which indicate the overall low performance in the economy. There was big difference between the maximum annual growth rate of imports equals 68% in year 2004 and minimum exports growth rate equals -20.5% in year 1994 when the economy performs less. This shows country's performance in decreasing the rate of growth imports was not good and percentage is fluctuating at high amount explained by the standard deviation for the sample period was Value of 18.36.

4.2. Test results for OLS assumptions

In this topic the assumptions of ordinary least square like Heteroscedasticity test, normality test, and multi co linearity test was performed for both the direct relationship between devaluation and the five intervening variable and the indirect relationship between GDP and devaluation.

4.2.1. Heteroscedasticity Test

The variance of the residual for all elements in the population is equal to the positive parameter $\sigma 2$. Homoscedasticity implies that this variance is constant for all elements, as opposed to heteroscedasticity where the variance of the residual is not constant for all elements in the population. In the output this can be examined by looking at the scatter plot from the regression standardized residual and regression standardized predicted value to see if the values fan out over the scatter plot. If they do, the scatter plot confirms heteroscedasticity. White (1980) as cited by (Brooks, 2008 p. 134) is the most popular test of Homoscedasticity was conducted to test the existence of heteroscedasticity. After examining the outcomes of the regression analyses without residual outliers, none of the regressions showed signs of heteroscedasticity. For an overview of this output, please refer to appendix A.

4.2.2. Normality Test

Another second important diagnostic test conducted in this paper was the normality assumption (i.e. normally distributed errors). Since the theory on mediating effects require the used variables to have a normal distribution, this needed to be tested for all dependent variables used in the following regression analysis. Brooks (2008) stated that the normality assumption is required in order to conduct single or joint hypothesis tests about the model parameters. One of the most commonly applied tests for normality is the Bera-Jarque (BJ) test. BJ uses the property of a normally distributed random variable that the entire distribution is characterized by the first two moments - the mean and the variance (Brooks, 2008, p.161). In case of this study, I have used BJ normality test to test the null hypothesis of normally distributed errors assumptions. In this test skewness and kurtosis values was also checked to make final conclusion about the regression result. The values within the range of 2 and -2 are said to be acceptable. Beyond these limits can be a skewed data. Hair et al. (2010) and Bryne (2010) argued that data is considered to be normal is skewness is between 2 to -2 and kurtosis between -7 to 7.

For the relationship between devaluation and GDP variables, skewness score was between 0 and -1 (skewness = -0.739) meaning there is a normal distribution which is slightly skewed negatively (towards the left), indicating that the variables were skewed to a significant degree. To test if values were skewed to a significant degree, the values had to be lower than 2 standard errors of skewness (ses). The standard error of skewness is given in each table was 0.456 for all variables. Whereas skewness (as the name indicates) refers to how skewed a distribution is, kurtosis refers to how flat or peaked a distribution is. A negative value indicates a flat distribution and contrary a positive value indicates a peaked distribution. For the relationship between devaluation and GDP variables, kurtosis score was between 0 and 1 (kurtosis = 0.559) it showed slightly peaked distribution. Once again, to see if this distribution is alarming, the kurtosis values need to be compared with 2 standard errors of kurtosis (sek). This too is given in each table, and again is the same for all variables: 0.887. This means that distribution of the variables have a significant kurtosis.

For the relationship between devaluation and inflation variables, skewness score was between 0 and 1 (skewness = 0.76) meaning there is a normal distribution which is slightly skewed

positively (towards the right), indicating that the variables were skewed to a significant degree. To test if values were skewed to a significant degree, the values had to be lower than 2 standard errors of skewness (ses). The standard error of skewness is given in each table was 0.456 for all variables. For the relationship between devaluation and inflation variables, kurtosis score was between 0 and 1 (kurtosis = 0.168) it show slightly peaked distribution. Once again, to see if this distribution is alarming, the kurtosis values need to be compared with 2 standard errors of kurtosis (sek). This too is given in each table, and again is the same for all variables: 0.887. This means that distribution of the variables have a significant kurtosis.

For the relationship between devaluation and FDI variables, skewness score was between 0 and 1 (skewness = 0.632) meaning there is a normal distribution which is slightly skewed positively (towards the right), indicating that the variables were skewed to a significant degree. To test if values were skewed to a significant degree, the values had to be lower than 2 standard errors of skewness (ses). The standard error of skewness is given in each table was 0.456 for all variables. For the relationship between devaluation and FDI variables, kurtosis score was between 0 and -1 (kurtosis = -0.583) it show slightly flat distribution. Once again, to see if this distribution is alarming, the kurtosis values need to be compared with 2 standard errors of kurtosis (sek). This too is given in each table, and again is the same for all variables: 0.887. This means that distribution of the variables have a significant kurtosis.

For the relationship between devaluation and saving rate variables, skewness score was between 0 and 1 (skewness = 0.944) meaning there is a normal distribution which is slightly skewed positively (towards the right), indicating that the variables were skewed to a significant degree. To test if values were skewed to a significant degree, the values had to be lower than 2 standard errors of skewness (ses). The standard error of skewness is given in each table was 0.456 for all variables. For the relationship between devaluation and saving rate variables, kurtosis score was between 0 and 1 (kurtosis = 0.136) it show slightly peaked distribution. Once again, to see if this distribution is alarming, the kurtosis values need to be compared with 2 standard errors of kurtosis (sek). This too is given in each table, and again is the same for all variables: 0.887. This means that distribution of the variables have a significant kurtosis.

For the relationship between devaluation and export variables, skewness score was between 1.674 meaning there is a normal distribution which is slightly skewed positively (towards the right), indicating that the variables were skewed to a significant degree. To test if values were

skewed to a significant degree, the values had to be lower than 2 standard errors of skewness (ses). The standard error of skewness is given in each table was 0.456 for all variables. For the relationship between devaluation and export variables, kurtosis score was 4.487 it show peaked distribution but its value is still in acceptable range. Once again, to see if this distribution is alarming, the kurtosis values need to be compared with 2 standard errors of kurtosis (sek). This too is given in each table, and again is the same for all variables: 0.887. This means that distribution of the variables have a significant kurtosis.

For the relationship between devaluation and import variables, skewness score was between 0 and 1 (skewness = 0.805) meaning there is a normal distribution which is slightly skewed positively (towards the right), indicating that the variables were skewed to a significant degree. To test if values were skewed to a significant degree, the values had to be lower than 2 standard errors of skewness (ses). The standard error of skewness is given in each table was 0.456 for the devaluation and inflation variables. For the relationship between devaluation and import variables, kurtosis score was 2.130 it show slightly peaked distribution. Once again, to see if this distribution is alarming, the kurtosis values need to be compared with 2 standard errors of kurtosis (sek). This too is given in each table, and again is the same for all variables: 0.887. This means that distribution of the variables have a significant kurtosis. For an overview of this output, please refer to appendix B.

4.2.3. Multi co linearity Test

A multi co linearity problem occurs when two or more explaining variables in a regression model are so highly interrelated that although the joint contribution is significant, the individual significant contributions cannot be determined. The third test have conducted in this study was the multi co linearity test, this help to identify the correlation between explanatory variables and to avoid double effect of independent variable and intervening variables from the model. A correlation is a single number that describes the degree of relationship between two variables. In other words, multi co linearity describes the relationship among explanatory variables.

Multi co linearity in the output can be controlled for by looking at the tolerance values (Tolk) or Variance Inflation Factors (VIF). Low tolerance levels (Tolk < 0.2 or VIF > 5) are an indication

of possible multi co linearity. Based on the idea of Cooper and Schindler (2009) and Hailer et al (2006) suggested that multi co linearity problem should be corrected when the correlation extent to be above positive or negative 0.8 and 0.9 respectively.

In this paper, for all regression models, the correlation statistics were examined (see appendix C), but none showed possible multi co linearity. On the one hand this is a good thing, on the other hand, multi co linearity is assumed to appear in case of a mediating effect. For an overview of this output, please refer to appendix C.

4.3. Results of mediation analysis with multiple linear regression

This section presents over all the empirical results of the regressions. The evaluation of the mediating effect was done using the Causal Step Method by Baron and Kenny (1986) and Next to this causal step method, the Product-of-Coefficients Test by Sobel (1982) provides as a second measure of the mediating effect and all results were discussed and presented with the reference of 95% confidence interval.

4.3.1. The relationship between GDP and Devaluation

This regression test was conducted in order to test the relationship between the dependent variable GDP and the independent variable devaluation. This test is also called the total effect test.

Table 4.2: Regression result for the relationship between GDP and Devaluation

R	R-squared	F-statistics	P-value
0.3872	0.1499	4.2335	0.0507

	Coefficient	Standard Error	T-statistics	P-value
Constant	3.5339	2.1616	1.6349	0.1151
Devalue	0.3422	0.1663	2.0575	0.0507

Source: Mediation analysis with multiple linear regression result run by the researcher from SPSS

From the above regression result table, the coefficient of 0.3422 means GDP increases by 0.3422 every unit increases of devaluation. On the other hand the R squared value tells about the effect size. The R-squared of 0.1499 means that by knowing the coefficient of devaluation we could explain 14.99 % of the variance in GDP. This is generally considered small size but the meaningfulness of the results does not depend on it. The meaningfulness of this test has depended on the p-value because the p-value says something about the significance of the result. The P-value is the probability of getting a result at least as extreme as the one that was actually observed, given that the null hypothesis is true. From the above test, the calculated p-value is 0.0505; it is approximately equals to significance level (i.e. $p < 0.05$). So that, based on the above p-value, the two variables have statistically significant relationship but the result of the direct effect analysis is not enough to make the final decision unless the indirect effect analysis is must be conducted in order to analyze the mediating effect of the intervening variables to make final conclusion for accepting or rejecting the null hypothesis.

4.3.2. The relationship between Inflation and Devaluation

This regression test was conducted in order to test the relationship between independent variable devaluation and intervening variable inflation.

Table 4.3: Regression result for the relationship between Inflation and Devaluation

R	R-squared	F-statistics	P-value
0.1731	0.0300	0.7417	0.03976

	Coefficient	Standard Error	T- statistics	P-value
Constant	6.7952	4.0120	1.6937	0.0103
Devaluation	0.2658	0.3087	0.8612	0.0397

Source: Mediation analysis with multiple linear regression result run by the researcher from SPSS

From the above regression result, the following results can be interpreted as follows. The coefficient of 0.2658 means inflation increases by 0.2658 every unit increases of devaluation. The R-squared of 0.03 means that by knowing the coefficient of devaluation we could explain 3 % of the variance in inflation. From the above test, the calculated p-value is 0.03976; it is less than the significance level (i.e. $p < 0.05$). So that, based on the above p-value, the two variables have statistically significant relationship.

4.3.3. The relationship between GDP and Inflation

This step was conducted in order to test the relationship between the intervening variable inflation and the dependent variable GDP.

Table 4.4: regression result for the relationship between GDP and Inflation

	coefficient	Standard Error	T-statistics	P-value
Constant	1.3866	0.6552	2.1162	0.0454
Inflation	-0.0861	0.0315	-2.7341	0.0118

Source: Mediation analysis with multiple linear regression result run by the researcher from SPSS

From the above summarized table, the following results can be interpreted as follows. The coefficient of - 0.0861 means GDP decreases by - 0.0861 every unit increases of inflation. This result supports prior expected sign of the coefficient as found by Ghura (1998) and Madhavi (2008), due to fluctuation in inflation rate was high from its standard deviation GDP growth were not as it has planned and expected. On the other hand the R squared value tells about the effect size. The R-squared of 0.3995 means that by knowing the coefficient of inflation we could explain 39.95% of the variance in GDP. This is generally considered medium size. From the above test, the calculated p-value is 0.0118; it is less than the significance level (i.e. $p < 0.05$). So that, based on the above p-value, the two variables have statistically significant relationship.

4.3.4. The mediating effect of Inflation on GDP

Table 4.5: The regression result for the mediating effect of Inflation on GDP

R	R-squared	F-statistics	P-value
0.6320	0.3995	7.6491	0.0028

	Coefficient	Standard Error	T-statistics	P-value
Constant	1.3866	0.6552	2.1162	0 .0454
Devalue	0.2658	0.0484	3.2281	0.0037
Inflation	-0.0861	0.0315	- 2.7341	0.118

Source: Mediation analysis with multiple linear regression result run by the researcher from SPSS

From the above model, the mediation effect was calculated as $(\tau - \tau')$. This represents the change in the magnitude of the effect that the independent variable has on the dependent variable after controlling for the mediator. From examination of these equations it can be determined that $(B_1 B_2) = (\tau - \tau')$. The term represents the magnitude of the relationship between the independent variable and the mediator. The B_2 term represents the magnitude of the relationship between the mediator and dependent variable after controlling for the effect of the independent variable. Therefore $(B_1 B_2)$ represents the product of these two terms. In essence this is the amount of variance in the dependent variable that is accounted for by the independent variable through the mechanism of the mediator. From the above equation the product of coefficient value is -0.0228. That means GDP decreases by -0.0228 every unit increase of devaluation with the mediating role of inflation. In addition to this the p-value that have gotten from the indirect effect result is less than the value of pre-chosen significance level (p = 0.0028).

Therefore, devaluation has a negative significant impact on GDP with the intervention of inflation then the null hypothesis is rejected.

4.3.5. The relationship between FDI and Devaluation

This regression test was done in order to test the relationship between independent variable devaluation and intervening variable FDI.

Table 4.6: regression result for the relationship between FDI and Devaluation

R	R-squared	F-statistics	P-value
0.2501	0.043	6.1609	0.0205

	Coefficient	Standard Error	T- statistics	P-value
Constant	0.8012	0.6978	1.1482	0.2622
Devaluation	0.1333	0.0537	2.4821	0.0205

Source: Mediation analysis with multiple linear regression result run by the researcher from SPSS

From the above regression result, the following results can be interpreted as follows. The coefficient of 0.1333 means FDI increases by 0.1333 every unit increases of devaluation. The R-squared of 0.2043 means that by knowing the coefficient of devaluation we could explain 20.43 % of the variance in FDI. This is generally considered medium size. The calculated p-value from the above table is 0.0205, and its value is less than the significance level (i.e. $p < 0.05$). So that, based on the above p-value, the two variables have statistically significant relationship.

4.3.6. The relationship between GDP and FDI

This regression test was conducted in order to test the relationship between the intervening variable FDI and the dependent variable GDP.

Table 4.7: Regression result for the relationship between GDP and FDI

	coefficient	Standard Error	T-statistics	P-value
Constant	7.524	1.809	4.159	0.4797
FDI	0.036	0.612	1.3106	0 .000

Source: Mediation analysis with multiple linear regression result run by the researcher from SPSS

From the above regression table, the following results can be interpreted as follows. The coefficient of 0.036 means GDP increases by 0.036 every unit increase of FDI. Even though the coefficient is positive, the result in case of Ethiopia is not as expected and prior researches like Haider M & A.R Chaudhary (2013) found that foreign direct investment have a positive

significant impact on GDP growth. The R-squared of 0.95 means that by knowing the coefficient of FDI we could explain 95% of the variance in GDP. This is generally considered large. The result of the calculated p-value from the above table is 0 .000, and this value is less than the significance level (i.e. $p < 0.05$). So that, based on the above p-value, the two variables have statistically significant relationship.

4.2.2. The mediating effect of FDI on GDP

Table 4.8: Regression result for the mediating effect of FDI on GDP

R	R-squared	F-statistics	P-value
0.95	0.95	1.0803	0.0010

	Coefficient	Standard Error	T-statistics	P-value
Constant	0.3364	0.4021	2.1162	0 .0454
Devalue	0.1333	0.0215	3.2281	0.0037
FDL	0.036	0.0303	2.7341	0.0001

Source: Mediation analysis with multiple linear regression result run by the researcher from SPSS

From the above model, the mediation effect was calculated as $(\tau - \tau')$. This represents the change in the magnitude of the effect that the independent variable has on the dependent variable after controlling for the mediator. From examination of these equations it can be determined that $(B_1B_2) = (\tau - \tau')$. The term represents the magnitude of the relationship between the independent variable and the mediator. The B_2 term represents the magnitude of the relationship between the mediator and dependent variable after controlling for the effect of the independent variable. Therefore (B_1B_2) represents the product of these two terms. In essence this is the amount of variance in the dependent variable that is accounted for by the independent variable through the mechanism of the mediator.

High inflation, on the other hand, indicates the inability of a government to balance its budget and failure of a country's central bank to conduct appropriate monetary policy and hence may reflect instability of the macroeconomic policy of the host country. This type of instability creates uncertainty in the investment environment, which discourages FDI, and the reduction of

FDI is worsened by the fact that the relative costs of production in host countries rise, unless this is compensated by a proportionate depreciation of the currency (Schneider & Frey, 1985; Banga, 2003:15). It can therefore be argued that, if foreign investors are risk averse or even risk neutral, uncertainty about the potential for high inflation rates may lead to a reduction in FDI, because investors do not want to risk their expected profits. As long as there is uncertainty about the future level of inflation, foreign investors will demand a higher price to cover their exposure to inflation risks and this in turn will decrease the volume of investment.

From the above equation the product of coefficient value is 0.0047. That means GDP increases by 0.0047 every unit increase of devaluation with the mediating role of FDI. Even though FDI positively related with GDP of the country, the existence of economic imbalance and high inflationary pressure the decline growth rate was registered during the last consecutive years. But the p-value that have gotten from the indirect effect result is less than the value of pre-chosen significance level ($p = 0.000$) because of having a significant relationship between them.

Therefore, devaluation has a positive significant impact on GDP with the intervention of FDI so that the null hypothesis is rejected.

4.3.7. The relationship between Saving rate and Devaluation

This regression test was done in order to test the relationship between independent variable devaluation and intervening variable saving rate.

Table 4.9: Regression result for the relationship between Saving rate and Devaluation

R	R-squared	F-statistics	P-value
0.1686	0.0284	0.7021	0 .0410

	Coefficient	Standard Error	T- statistics	P-value
Constant	6.5580	1.0670	6.1462	0.0014
Devaluation	-0.0688	0.0821	-0.8379	0.0410

Source: Mediation analysis with multiple linear regression result run by the researcher from SPSS

From the above summarized regression table, the following results can be interpreted as follows. The coefficient of -0.0688 means annual saving interest rate decreases by 0.0688 every unit increases of devaluation. The researcher like Yohannes (2017) has found that the raised interest rate to 7 percent from 5 percent to stimulate savings as well as to counter inflation was not proportional to the existing inflation rate of the country. The R-squared of 0.0284 means that by knowing the coefficient of devaluation we could explain 2.84 % of the variance in saving rate. This is generally considered small size. The calculated p-value from the above table is 0.0410, and this value is less than the significance level (i.e. $p < 0.05$). So that, based on the above p-value, the two variables have statistically significant relationship.

4.3.8. The relationship between GDP and saving rate

This regression step was conducted in order to test the relationship between the intervening variable saving rate and the dependent variable GDP.

Table 4.10: Regression result for the relationship between GDP and saving rate

	coefficient	Standard Error	T-statistics	P-value
Constant	1.9347	1.1030	1.7540	0.0927
Interest rate	-0.1728	0.1315	-1.3141	0.0099

Source: Mediation analysis with multiple linear regression result run by the researcher from SPSS

From the above summarized table, the following results can be interpreted as follows. The coefficient of - 0.1728 means GDP decreases by - 0.1728 every unit increases of annual saving interest rate. The R-squared of 0.2598 means that by knowing the coefficient of saving rate we could explain 25.98% of the variance in GDP. This is generally considered small size. The p-value from the above table is 0.0099, and this value is less than the significance level (i.e. $p < 0.05$). So that, based on the above p-value, the two variables have statistically significant relationship.

4.3.9. The mediating effect of saving rate on GDP

Table 4.11: Regression result for the mediating effect of saving rate on GDP

R	R-squared	F-statistics	P-value
0.5097	0.2598	4.0372	0.0314

	Coefficient	Standard Error	T-statistics	P-value
Constant	1.9347	1.1030	1.7540	0.0927
Devalue	-0.0688	0.0537	2.2618	0.0230
Interest rate	-0.1728	0.1315	-1.3141	0.0099

Source: Mediation analysis with multiple linear regression result run by the researcher from SPSS

From the above model, the mediation effect is calculated as $(\tau - \tau')$. This represents the change in the magnitude of the effect that the independent variable has on the dependent variable after controlling for the mediator. From examination of these equations it can be determined that $(B_1B_2) = (\tau - \tau')$. The term represents the magnitude of the relationship between the independent variable and the mediator. The B_2 term represents the magnitude of the relationship between the mediator and dependent variable after controlling for the effect of the independent variable. Therefore (B_1B_2) represents the product of these two terms. In essence this is the amount of variance in the dependent variable that is accounted for by the independent variable through the mechanism of the mediator. From the above equation the product of coefficient value is 0.0118. That means GDP increases by 0.0118 every unit increase of devaluation with the mediating role of annual saving interest rate. In addition to this the p-value that have gotten from the indirect effect result is less than the value of pre-chosen significance level (p = 0.0314).

Therefore, devaluation has a positive significant impact on GDP with the intervention of annual saving interest rate so that the null hypothesis is rejected.

4.3.10. The relationship between Export and Devaluation

This regression test was done in order to test the relationship between independent variable devaluation and intervening variable export.

Table 4.11: Regression result for the relationship between export and Devaluation

R	R-squared	F-statistics	P-value
0.3075	0.0945	2.5057	0.1265

	Coefficient	Standard Error	T- statistics	P-value
Constant	15.5950	5.8827	2.6510	0 .0140
Devaluation	-0.7164	0.4526	-1.5829	0.1265

Source: Mediation analysis with multiple linear regression result run by the researcher from SPSS

From the above summarized regression table, the following results can be interpreted as follows. The coefficient of -0.7164 means exports of goods and services decreases by 0.7164 every unit increases of devaluation. Like Bersufekad (2017) has found that annual growth rate of exports of Ethiopia have run under a decreasing rate and it affects the total growth of GDP of the country due to devaluation. The R-squared of 0.0945 means that by knowing the coefficient of devaluation we could explain 9.45 % of the variance in export. This is generally considered small size. The p-value from the above table is 0.1265, and this value is greater than the significance level (i.e. $p < 0.05$). So that, based on the above p-value, the two variables have statistically non-significant relationship.

4.3.11. The relationship between GDP and export

This regression test was conducted in order to test the relationship between the intervening variable export and the dependent variable GDP.

Table 4.12: regression result for the relationship between GDP and export

	coefficient	Standard Error	T-statistics	P-value
Constant	0.1267	0.7547	0.1679	0.8682
Exports of goods and services	0.0433	0.0230	1.8780	0.0909

Source: Mediation analysis with multiple linear regression result run by the researcher from SPSS

From the above summarized regression table, the following results can be interpreted as follows. The coefficient of 0.0433 means GDP increases by 0.0433 every unit increase of export. The R-squared of 0.3101 means that by knowing the coefficient of export, we could explain 31.01% of

the variance in GDP. This is generally considered medium size. The p-value from the above table is 0.0909, and this value is also greater than the significance level (i.e. $p < 0.05$). So that, based on the above p-value, the two variables have statistically non-significant relationship.

4.3.12. The mediating effect of export on GDP

Table 4.13: Regression result for the mediating effect of export on GDP

R	R-squared	F-statistics	P-value
0.5568	0.3101	5.1682	0.140

	coefficient	Standard Error	T-statistics	P-value
Constant	0.1267	0.7547	0.1679	0.8682
Devaluation	-0.7164	0.0537	3.0605	0.0055
Exports of goods and services	0.0433	0.0230	1.8780	0.0909

Source: Mediation analysis with multiple linear regression result run by the researcher from SPSS

From the above model, the mediation effect was calculated as $(\tau - \tau')$. This represents the change in the magnitude of the effect that the independent variable has on the dependent variable after controlling for the mediator. From examination of these equations it can be determined that $(B_1 B_2) = (\tau - \tau')$. The term represents the magnitude of the relationship between the independent variable and the mediator. The B_2 term represents the magnitude of the relationship between the mediator and dependent variable after controlling for the effect of the independent variable. Therefore $(B_1 B_2)$ represents the product of these two terms. In essence this is the amount of variance in the dependent variable that is accounted for by the independent variable through the mechanism of the mediator. From the above equation the product of coefficient value is -0.0310. That means GDP decreases by -0.0310 every unit increase of devaluation with the mediating role of exports of goods and services. In addition to this the p-value that have gotten from the indirect effect result is greater than the value of pre-chosen significance level ($p = 0.140$).

Therefore, devaluation has a negative non-significant impact on GDP with the intervention of exports of goods and services so that the null hypothesis is accepted.

4.3.13. The relationship between Import and Devaluation

This regression test was conducted in order to test the relationship between independent variable devaluation and intervening variable import.

Table 4.14: regression result the relationship between Import and Devaluation

R	R-squared	F-statistics	P-value
0.0230	0.0501	0.0127	0.9111

	Coefficient	Standard Error	T- statistics	P-value
Constant	14.1039	7.6935	1.8332	0.0792
Devaluation	0.0668	0.5919	-0.1128	0.9111

Source: Mediation analysis with multiple linear regression result run by the researcher from SPSS

From the above summarized regression table, the following results can be interpreted as follows. The coefficient of 0.0668 means imports of goods and service increases by 0.0688 every unit increases of devaluation. Like Bonsa, (2014) has found that the value of goods and services registered by Ethiopia as imported have consistently in an increasing rate and it affects the total growth of GDP of the country due to devaluation. Eshetu, (2017) also found the result that devaluation has not discouraged imports and improved trade deficit, currently, the problem has continued, such that, import is near unresponsive to the devaluation of the currency and its value has increased by more than export value and this has led to further deterioration of the trade balance of Ethiopia.

The R-squared of 0.0501 means that by knowing the coefficient of devaluation we could explain 5.01 % of the variance in import. This is generally considered small size. The p-value from the above table is 0.9111, and this value is greater than the significance level (i.e. $p < 0.05$). So that, based on the above p-value, the two variables have statistically non-significant relationship.

4.3.14. The relationship between GDP and Import

This regression test was done in order to test the relationship between the intervening variable import and the dependent variable GDP.

Table 4.15: Regression result for the relationship between GDP and Import

	coefficient	Standard Error	T-statistics	P-value
Constant	0.4516	0.7321	0.6168	0.05434
Imports of goods and services	-0.0248	0.0182	1.3627	0.0624

Source: Mediation analysis with multiple linear regression result run by the researcher from SPSS

From the above summarized regression table, the following results can be interpreted as follows. The coefficient of -0.0248 means GDP decreases by 0.0248 every unit increase of imports. The R-squared of 0.3101 means that by knowing the coefficient of import, we could explain 31.01% of the variance in GDP. This is generally considered medium size. The p-value from the above table is 0.0624, and in this case the p-value is greater than the significance level (i.e. $p < 0.05$). But it does not mean that the two variables are statistically non-significant and we cannot make the final decision unless the indirect effect test has made. The final decision has made based on the indirect effect result.

4.3.15. The mediating effect of import on GDP

Table 4.16: regression result for the mediating of import on GDP

R	R-squared	F-statistics	P-value
0.5135	0.2637	4.1189	0.0296

	coefficient	Standard Error	T-statistics	P-value
Constant	0.4516	0.7321	0.6168	0.5434
Devaluation	0.0668	0.0528	2.5567	0.2441
Imports of goods and services	-0.0248	0.0182	1.3627	0.0624

Source: Mediation analysis with multiple linear regression result run by the researcher from SPSS

From the above models, the mediation effect is calculated as $(\tau - \tau')$. This represents the change in the magnitude of the effect that the independent variable has on the dependent variable after controlling for the mediator. From examination of these equations it can be determined that $(B_1 B_2) = (\tau - \tau')$. The term represents the magnitude of the relationship between the independent variable and the mediator. The B_2 term represents the magnitude of the relationship between the mediator and dependent variable after controlling for the effect of the independent variable. Therefore $(B_1 B_2)$ represents the product of these two terms. In essence this is the amount of variance in the dependent variable that is accounted for by the independent variable through the mechanism of the mediator. In the context of Ethiopia, the ongoing extensive investments on infrastructure have led to widening of gaps in investment and saving (17.5% of GDP in 2014/15) and in the external sector (Zerihun et al, 2016). According to the report, these macro-economic imbalances have in turn led to increase in external borrowing. Consequently, the stock of external public debt has soared fivefold from USD 2.8 billion in 2008/09 to USD 19 billion in 2014/15. The sharp increase in the stock of public debt has been driven primarily by major import intensive public enterprise investments and very slow moving export performance. The report shows that these poor performance and volatility in exporting and an ever-increasing demand for imports are the main reasons behind the worsening trade-account deficit. From the above equation the product of coefficient value is -0.0017 and this also indicted that devaluation has negatively related with GDP with the intervention of exports and imports variables in the context of Ethiopia. That means GDP decreases by -0.0017every unit increase of devaluation with the mediating role of imports of goods and services. In addition to this the p-value that has gotten from the indirect effect result is greater than the value of pre-chosen significance level.

Therefore, devaluation has a negative non-significant impact on GDP with the intervention of imports of goods and services so that the null hypothesis is accepted.

CHAPTER FIVE

SUMMARY, CONCLUSIONS, AND RECOMMENDATIONS

5.1. Summary of the major findings

The above-analyzed data told us that the following summarized issues. There is a direct relationship between currency devaluation and inflation. According to the above analyzed data, when the domestic currency supplies increases it immediately increases the prices of almost all goods, commodities, and services in the country. But inflation inversely affects the GDP of Ethiopia it means the present level of inflation in Ethiopia decreases the economic growth of Ethiopia due to this reason currency devaluation negatively affects Ethiopian economy with the mediating role of inflation.

When we see the relationship between currency devaluation and FDI based on the above analyzed data, when the domestic currency supplies increases it makes an increase of total annual FDI inflows of the country. And also the increases of annual FDI inflows make a positive increase on the GDP of the country. Due to this reason devaluation positively affects Ethiopian economy with the mediating role of FDI inflows. There is also a direct relationship between currency devaluation and annual saving interest rate growth based on the above analysis result. That means most of the time when domestic money supply increases interest rate should increases in order to promote saving trend. Due to the increasing rate of annual saving interest rate, currency devaluation has a positive contribution on Ethiopian GDP with the mediating role of annual saving interest but the present saving rate is not enough to attract both domestic and foreign investors as it compared to the present rate of growth of inflation.

On the other case currency devaluation expected to boost exports but according to the above analyzed data Ethiopia records the declining growth rate of exports that means negative exports growth rate during last four years. This creates an inverse relation between annual growth rate of exports of goods and services and the existence of high exchange rate depreciation in Ethiopia. Due to this reason high exchange rate depreciation has a negative non-significant effects on Ethiopian exports growth rate and this adversely affects the GDP growth of the country. And also there is a direct relationship between currency devaluation and annual growth rate of imports of goods and services in Ethiopia instead of having a decreasing effect on its growth

rate. According to the above analyzed data, when the domestic currency supplies increases it also increases the rate of change of annual imports growth. And also high rate of cash out flows are registered during the last ten years in Ethiopia and devaluation actually doesn't lead the Ethiopian import demand to decrease and the sign of the parameter of import is not negative either. So that currency devaluation has a negative impact on GDP growth with the mediating role of annual growth rate of imports of goods and services in the country.

5.2. Conclusions

In order to check the validity of currency devaluation for Ethiopia, mediation analysis with multiple linear regression models are estimated by using the OLS (ordinary least square) method. Specifically, in order to see the relationship between the nation's GDP growth and currency devaluation with the intervening role of export, import, inflation rate, FDI, and interest rate. The results of the mediation analysis showed us that as devaluation applies in the economy, the nation's export is negatively affected during the last four years but exports are increased to some extent but unlike the theoretical expectations, instead of decreasing the nation's imports demand, devaluation has a positive impact on Ethiopian imports. Additionally, since the coefficient of the currency devaluation variable is not statistically significant with both exports and imports of goods and services. It can be said that exchange rate is not one of the determinant factors of exports and imports for Ethiopian economy. Compared to the previous year same period the income has declined by 10%. Ethiopian export income has been declining over the past several years from around $3.1 billion in 2010 to around $2.8 billion last year. That means its growth rate has declined by 38 percent in six months of the current Ethiopian fiscal year (July, 8, 2018 to January 7, 2019). Since the nation's production is highly dependent on imported goods (we need to bear in mind that even essential inputs for agricultural products like consumable goods, fertilizers, pesticides, sophisticated outputs, machineries petroleum and so on are goods that the nation imports from outside world). The adoption of the policy of devaluation makes the cost of production to rise and this might lead the domestic production to decrease or not to grow up as it was expected. In addition to this, cost of a nation's imports exceeds the cost of its exports this lead the nation to trade deficit (It's one way of measuring international trade, and it's also called a negative balance of trade). You can calculate a trade deficit by subtracting the total value of a

country's exports from the total value of its imports. Therefore, in order to fill the gap between the domestic demand and domestic supply of the economy, imports are the only choice that the nation has even if it is very expensive and hard to afford.

In Ethiopia, inflation has been very high and among the factors, the devaluation of domestic currency, increase in money supply and an increase in the world commodity prices were perceived to be the most important. It was in this context of high inflation and foreign exchange crunch, that the World Bank has advised the country to devaluate its currency. In accordance with the advice, the National Bank of Ethiopia has devalued its currency by 15 percent in 2017 and immediately after the devaluation of Birr on October 10, 2017; the prices of almost all commodities and services have sharply increased and have resulted in a rise in the general price level. In other words, the immediate effect of devaluation was acceleration in inflation. Specifically, inflation measured in terms of the Consumer Price Index (CPI) has increased by 3.4 percentage points from 12.2 percent in October 2017 to 15.6 percent in February 2018 and GDP deflator by 12.9 percent (Central Statistical Agency (CSA), 2018). Thus, the increased inflation in Ethiopia, owing to the devaluation of Birr once again establishes the fact that there is a direct relationship between devaluation and inflation. Hence, one of the important factors in the persistence of high inflation in Ethiopia has been the frequent devaluation of Birr. This may be partly due to the increase in government debt and due to an increase in the cost of public investment. Because of that the nation's goods may become less competitive in the international market, which leads to a fall in demand for that nation's goods, which in return lessen exports of the nation as no one would like to buy at high price. Which may also create a deficit in the current account balance as we know when import is higher than export, it creates deficit in the balance of trade. Therefore, a continuous and high devaluation of currency may possibly bring evil consequences on Ethiopian economy.

Several studies have established that exchange rate movement impact on FDI. When a currency depreciates, meaning that its value declines relative to the value of another currency, this exchange rate movement has two potential implications for FDI. First, it reduces that country's wages and production costs relative to those of its foreign counterparts. All else equal, the country experiencing real currency depreciation has enhanced location advantage or attractiveness as a location for receiving productive capacity investments. By this relative wage channel, the exchange rate depreciation improves the overall rate of return to foreigners

contemplating an overseas investment project in this country and vice versa for a currency appreciation (Goldberg, 1993). FDI provides a larger pool of advantages to the host countries. The major benefits are FDI can stimulate the target country's economic development, creating a more conducive environment for you as the investor and benefits for the local industries, creates new jobs, as investors build new companies in the target country, create new opportunities. This leads to an increase in income and more buying power to the people, which in turn leads to an economic boost, Development of Human Capital Resources, FDI will allow resource transfer and other exchanges of knowledge, where various countries are given access to new technologies and skills, he facilities and equipment provided by foreign investors can increase a workforce's productivity in the host country and so on.

Even though FDI into Ethiopia has a positive impact on economy it has declined by 10% to $3.6 billion in 2017 as compared to the previous year. One good reason for that is the existence of high inflation rate in the country and this can make investments less desirable, since it creates uncertainty for the future. On the other hand Ethiopia highly dependent on imported factor of production. This also makes their production cost very expensive and they are expected to set higher prices on their products and this may leads the domestic market less attractive and less competitive. Lack of inputs for the manufacturing companies, which often couldn't get the hard currency on time is also mentioned as basic challenges of FDI growth not that much as it was expected to be in the country.

The central bank of Ethiopia has also announced that it has raised the main interest rate to 7 percent from 5 percent after the devaluation of currency at 2017 to stimulate savings as well as to counter inflation. Inflation and interest rate have a direct relationship. For example, when the rate of inflation in a given country is 11 percent then it expected to pay at least an interest rate of 11 percent in order to attract big investors and to stimulate saving trends of the country. In the context of Ethiopia recently registered rate of inflation rate was about 10. 9 percent as general inflation in 2019 then the government has expected to pay more than or equal to 10.9 percent interest rate in order to attract saving and choose to spend less. Other issues such as political instability, unfavorable exchange rate fluctuation, and illegal trade practices (contraband, black market or unofficial exchange rate market…) also taken in to account when we talk about economic growth of a given country.

Therefore, we can generalize from the above elaborated issues that depreciation of domestic exchange rate is not a determinant factor for Ethiopian economic growth and there must be an acquit structural economic policy reformation in Ethiopia before doing depreciation of domestic exchange rate over and over again without achieving a sustainable and attractive changes on economy unless it hearts instead.

5.3. Recommendations

Based on the findings of the study, the following recommendations are forwarded in order to tackle economic problems faced by Ethiopia due to currency devaluation.

- Agricultural diversification: - Agricultural diversification is the next stage in transforming traditional agriculture to a dynamic, commercial sector. Diversification in the product mix of agriculture, through a shift towards high-value products, has great potential for accelerating growth rates in production.

- Import substitution strategies: - demand side policies like devaluation are not effective in making the nation's trade balance better off therefore, rather than focusing only on demand side policies, supply side policies need to be considered and implemented in the economy so as to produce more outputs and achieve economic growth. Since there is a huge gap between the demand and supply of many commodities in the economy, the only means of solving the problem in the long run should be producing them domestically though in the short run it is a must to import those commodities from abroad. To solve the supply problem from its root, micro financial institutions can play a significant role in lending money for different group of people who would like to work together on implantation of desirable crops which can be used as an input for the different kinds of production, modern mechanized farming on crops like wheat, maize, sorghum and the like.

- Short term and long term Export promotion strategies (policies): - Export promotion policies reflect the interest of national governments to stimulate exports. Subsidies, tax exceptions, and special credit lines are the main instruments used to promote exports. The most effective approaches are: Government fund transfers to selected entities (cash subsidies, tax exemptions, deferments, preferential tax treatment etc.), Regulatory policies (such as regulatory protection at the border, border tax adjustments, preferential rules of origin) that

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entail a transfer from one category to another, and Public good provision at no cost or below market price), Government is also responsible to set up favorable policy and institutional frameworks aimed at export promotion, the government must invest on export processing zone and other forms of Special Economic Zones (SEZs) which are demarcated geographical areas within a country's national boundaries where the regulation of firms' activity and the dedicated policies are differentiated from those applied to firms outside the zone, and addressed to creating a policy environment and associated infrastructures that are exporter friendly, for both domestic and foreign producers. Export promotion is sometimes seen as a complementary development strategy to import protection. While import protection usually allows infant industries to develop, export promotion allows access to external markets. Foreign demand is often required by the limited size of domestic markets and the need to achieve economies of scale, essential in many productive activities. Under increasing returns to scale, import protection may act as a form of export promotion, because in this case protection would allow considerable gains in terms of productivity that would enhance the possibilities of exporting. However, in policy circles export promotion or export oriented industrialization (EOI) is seen more often as an alternative development strategy to import substitution industrialization (ISI).

- Import restriction strategies (policies): - This may be done by fixing import quotas and in some cases by prohibiting the import of some non-essential commodities.

- Avoiding continuous and high devaluation of currency to the extent possible to avoid the evil consequences on the economy. That means reducing the money supply or at least stop it from growing. This often involves replacing the existing, near valueless, currency with a new currency. Controlling aggregate demand is important if inflation is to be controlled. If the government believes that AD is too high, it may choose to 'tighten fiscal policy' by reducing its own spending on public and merit goods or welfare payments and A reduction in company taxes to encourage greater investment.

- Reducing the money supply: - directly or indirectly reduce the money supply by enacting policies that encourage reduction of the money supply. Two examples of this include calling in debts that are owed to the government and increasing the interest paid on bonds so that more investors will buy them. The latter policy raises the exchange rate of the currency due to higher demand and, in turn, increases imports and decreases exports. Both of these policies

will reduce the amount of money in circulation because the money will be going from banks, companies and investors pockets and into the government's pocket where it can control what happens to it. And also these **'**tightening of monetary policy' higher interest rates can reduce consumer and investment spending. This should be applied for short term till higher inflation rate and the imbalance of payment are controlled.

- Strategies to encourage Diaspora remittances: - remittances become an extremely important source of exchange rate for Ethiopia. Even today, remittances play a key role in the Ethiopian economy contributing over 1 percent to the nations GDP. Strategy like reducing remittance fees would increase the disposable income of migrants, boost their incentives to send money home, and encourage the use of formal remittance channels. In addition to this it can also the major component of the balance of payments of the nation.

- Finally, the government should invest in human capital and have to follow a policy which promotes technology transformation in order to increase the nation's productivity of low tech industries so as to enable the country to be self-sufficient at least in these industries. The government should also motivates the educated people to establish profession based institutions so that academicians and experts would either individually, or collectively make research works, vital projects on different sectors and innovate something new that enables the nation to go forward in a sustainable manner

REFERENCES

- Ayen, Y.W., The effect of currency devaluation on output: The case of Ethiopian economy, *Journal of Economics and International Finance*, 2014.

- Asmamaw, H., *The Impact of devaluation trade balance*, *on* University of Oslo, 2008

- Bahmani-Oskooee, M. and Mitezal, I., *Are Devaluations Expansionary or Contractionary?* : A survey article, Ecoramic Issues, 2003 Bahmani-Oskooee, M., Are Devaluations Contractionary in LDCs? , *Journal of Economic Development*, 1998.

- Biz/ed - Advantages and disadvantages of floating exchange rates ... (http://www.bized.co.uk/virtual/bank/economics/markets/foreign/further2.htm,)

- Blecker, R. a & Razmi, A., 2007. The fallacy of composition and contractionary devaluations: output effects of real exchange rate shocks in semi-industrialized countries. *Cambridge Journal of Economics*, 32(1), pp.83-109.

- Brooks, C. 2008. Introductory Econometrics for Finance. Cambridge: Cambridge University Press.

- Calvo G.A. and Mishkin, F.S. Mirage of Exchange Rate Regimes for Emerging Market Countries, 2003 http://www.nber.org/papers/w9808

- Causality between devaluation and trade balance: evidence from… (http://www.freepatentsonline.com/article/Indian-Journal-Economics-Business/169308074.html, as accessed on 01, 07, 2014)

- Central Statistical Agency (CSA), Annual Report (2018).

- Chou, W and C Chao (2001): "Are currency devaluations effective? A panel unit root test", Economic Letters Vol. 72, pp 19-25.

- Cooper, R (1971): "Currency devaluation in developing countries". Essays in International Finance no. 86. , Princeton. New Jersey: Princeton University.

- CSA 2019. Country and Regional Level Consumer Price Indices (CPI), Addis Ababa: CSA, Annual report.

- Derrese .D. 2001. The Parallel Foreign Exchange Market and Macroeconomic Performance in Ethiopia. African Economic Research.

- Fentahun B. 2011. The Impact of Real Effective Exchange Rate on Economic Growth of Ethiopia. M.Sc Thesis. Addis Ababa University.

- Frankel, J.A., Experience of and Lessons from Exchange rate Regimes in Emerging Economies: Working paper 10032, Cambridge 2003, 9-12 http/www.nber.org/papers/w1003

- Frankel, J (2005): "Mundell-Fleming lecture: contractionary currency crashes in developing countries", IMF Staff Papers, Vol. 52, No. 2.

- Gala, P, 2007. *Real exchange rate levels and economic development*: theoretical analysis and econometric evidence. Cambridge Journal of Economics, 32(2), pp.273-288.

- Goldberg, L., 1990. Nominal Exchange Rate Patterns: Correlations with entry, exit and investment in US industry.

- Goldstein, M., Adjusting China's Exchange Rate Policies, working paper wp04-1. Pdf, 2004, http://www.www.iie.com/publications/wp/wp04-1.pdf,

- IMF, 2010. The Federal Democratic Republic of Ethiopia: Second Review of the Arrangement under the Exogenous Shocks Facility.

- Hutchison, M and I Noy (2002): "Output costs of currency and balance of payments crises in emerging markets". Comparative Economic Studies, XLIV, No. 2 (summer), pp. 27-44.

- Judd, C.M. & Kenny, D.A. (1981). Process Analysis: Estimating mediation in treatment evaluations. *Evaluation Review, 5(5),* 602-619. Fritz, M.

- Kalyoncu, H., 2008. *Currency Devaluation and Output Growth*: Empirical Evidence from OECD Countries. Finance and Economics, 14(14).

- Kamal P. Upadhyaya*, 1999. Currency devaluation, aggregate output, and the long run: an empirical study. *Economics Letters*, 64(2), pp.197-202.

- Kenichi, O., 2009. *Ethiopia: Political Regime and Development Policies*,

- Kidane, A., 1994. Indices of Effective Exchange rates:A Comparative study of Ethiopia, Kenya and The Sudan. *African Economic Research consortium*, (November).

- Klau, M., *Exchange rate regimes and inflation and output in sub saharan countries*, Bank for International Settlements, 1998.

- Krugman P and L Taylor (1978): "Contractionary effects of devaluations", Journal of International Economics, Vol. 8, pp. 445-456.

- Lencho, D., *Response of export to exchange rate movement in Ethiopia*, National Bank of Ethiopia, 2010.

- Lencho, D., *the Effect of Exchange Rate Movement on Trade Balance In Ethiopia*, Tokyo University, 2013.

- MacKinnon, D.P. (2008). *Introduction to statistical mediation analysis.* Mahwah, NJ: Erlbaum.

- Mannur, H.G. (1995). *International Economics*. 2nd edition, New Delhi, Vikas publishing house pvt.ltd.

- Mehare, A. and Edriss, A.K., Evaluation of Effect of Exchange Rate Variability on Export of Ethiopia‟s Agricultural Product: Case of Oilseeds, *Journal of Economics and Sustainable Development*, 2012.

- MOFED 2018. Macroeconomic Developments in Ethiopia, Addis Ababa: MOFED, annual report.

- National Bank of NBE), Annual Ethiopia (Report (2018).

- National bank of Ethiopia (1993/4, 1997/98, 2010/11, 2011/12) fiscal year annually report.

- Ndlela, T. (2011). Implications of Real Exchange Rate Misalignment in Developing Countries: Theory, Empirical Evidence and Application to Growth Performance in Zimbabwe. Monash University Department of Economics, Australia.

- Ngandu, S. and Gebreslassie, T. 2006. When Might an Exchange Rate Depreciation be Growth Inducing or Contractionary? Human Sciences Research Council.

- Richard N. Cooper (1971).*Currency devaluation in developing countries*. Princeton jersey, International finance section department of economics Princeton University.

- Sobel, M. E. (1982). Asymptotic confidence intervals for indirect effects in mediation models. In S. Leinhardt (Ed.), *Sociological Methodology 1982* (pp. 290-312). Washington DC: American Sociological Association.

- Solomon. E., *The dilemma of exchange rate devaluation arrangements as solution for inclusion*, 2010, 2.

- Taye, H. 1999. The Impact of Devaluation on Macroeconomic Performance: The Case of Ethiopia. Journal of Policy Modeling.

- Tirsit, G. 2010. Currency devaluation and economic growth the case of Ethiopia; M.Cs thesis, Stockholm University.

- Tingley, D., Yamamoto, T., Hirose, K., Keele, L., & Imai, K. (2014). *Mediation: R package for causal mediation analysis*. Retrieved from ftp://cran.r-project.org/pub/R/web/packages/mediation/vignettes/mediation.pdf

- White, H. (1980). A Heteroscedasticity-consistent Covariance Matrix and a Direct Test for Heteroscedasticity. Econometrica.

- Yilkal, W. (2012). The effect of currency devaluation on output: The case of Ethiopian economy. M.Sc thesis, Jimma University.

- Zerayehu.S. (2006). How Central Bank responds to macroeconomic shocks? M.Sc Thesis, Addis Ababa University.

APPENDICES

APPENDIX A HETEROSCEDASTICITY TEST RESULT

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**************************************************************************
OUTCOME VARIABLE:
 Inflation
```

Model Summary

R	R-sq	F (HC0)	p
.1731	.0300	1.2002	.02842

Model

	Coefficient	se (HC0)	t	p
Constant	6.7952	3.2061	2.1194	.0446
Devaluation	.2658	.2426	1.0955	.02842

```
**************************************************************************
OUTCOME VARIABLE:
 FDI
```

Model Summary

R	R-sq	F (H C0)	p
.4520	.2043	11.7614	.0022

Model

	Coefficient	se (HC0)	t	p
Constant	.8012	.6131	1.3069	.2036
Devaluation	.1333	.0389	3.4295	.0022

```
**************************************************************************
OUTCOME VARIABLE:
 Interest rate
```

Model Summary

R	R-sq	F (HC0)	p
.1686	.0284	.7660	.03901

Model

	Coefficient	se (HC0)	t	p
Constant	6.5580	1.2554	5.2239	.0000
Devaluation	-.0688	.0786	-.8752	.03901

```
********************************************************************
```

OUTCOME VARIABLE:
 Export

Model Summary

R	R-sq	F (HC0)	p
.3075	.0945	4.2161	.0511

Model

	Coefficient	se (HC0)	t	p
Constant	15.5950	5.6012	2.7842	.0103
Devaluation	-.7164	.3489	-2.0533	.0511

```
********************************************************************
```

OUTCOME VARIABLE:
 Import

Model Summary

R	R-sq	F (HC0)	p
.0230	.0005	.0175	.8958

Model

	Coefficient	se (HC0)	t	p
Constant	14.1039	7.6458	1.8447	.0775
Devaluation	-.0668	.5046	-.1323	.8958

```
********************************************************************
```

OUTCOME VARIABLE:
 GDP

Model Summary

R	R-sq	F (HC0)	p
.6734	.4535	2.8996	.0352

Model

	Coefficient	se (HC0)	t	p
Constant	-2.1881	5.2548	-.4164	.6818
Devalue	.6039	.2067	2.9220	.0087
Inflation	-0.0861	.0863	.1747	.8631
FDI	0.036	.7049	-1.5980	.1265
Interest	-0.1728	.4382	1.1398	.2685
Export	0.0433	.0685	1.4967	.1509
Import	-0.0248	.0509	2.2972	.0331

APPENDIX B   NORMALITY TEST RESULT

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.387[a]	.150	.115	5.2650012

a. Predictors: (Constant), devalue

b. Dependent Variable: GDP

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	117.353	1	117.353	4.233	.051[b]
	Residual	665.286	24	27.720		
	Total	782.639	25			

a. Dependent Variable: GDP

b. Predictors: (Constant), devalue

Coefficients

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	3.534	2.162		1.635	.115
	Devalue	.342	.166	.387	2.058	.051

a. Dependent Variable: GDP

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	4.491975	12.875179	7.441231	2.1665926	27
Residual	-13.1639748	7.8982477	.0000000	5.1586266	27

Std. Predicted Value	-1.361	2.508	.000	1.000	27
Std. Residual	-2.500	1.500	.000	.980	27

a. Dependent Variable: GDP

Statistics

Mean	.0000000
Std. Deviation	1.66533938
Skewness	-.739
Std. Error of Skewness	.456
Kurtosis	.559
Std. Error of Kurtosis	.887
Minimum	-2.51683
Maximum	3.44479

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.173[a]	.030	-.010	9.7720413

a. Predictors: (Constant), devalue

b. Dependent Variable: inflation

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	70.828	1	70.828	.742	.0398[b]
	Residual	2291.827	24	95.493		
	Total	2362.655	25			

a. Dependent Variable: inflation

b. Predictors: (Constant), devalue

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	6.795	4.012		1.694	.103
	devalue	.266	.309	.173	.861	.0398

a. Dependent Variable: inflation

=

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	7.539538	14.052320	9.830769	1.6831920	27
Residual	-14.8547564	21.9996281	.0000000	9.5746060	27
Std. Predicted Value	-1.361	2.508	.000	1.000	27
Std. Residual	-1.520	2.251	.000	.980	27

a. Dependent Variable: inflation

Statistics

Mean	.0000000
Std. Deviation	9.57460600
Skewness	.760
Std. Error of Skewness	.456
Kurtosis	.168
Std. Error of Kurtosis	.887
Minimum	-14.85476
Maximum	21.99963

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.452[a]	.204	.171	1.6996799

a. Predictors: (Constant), devalue

b. Dependent Variable: FDI

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	17.798	1	17.798	6.161	.020[b]
	Residual	69.334	24	2.889		
	Total	87.132	25			

a. Dependent Variable: FDI

b. Predictors: (Constant), devalue

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.801	.698		1.148	.262
	devalue	.133	.054	.452	2.482	.020

a. Dependent Variable: FDI

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	1.174325	4.439084	2.322885	.8437587	27
Residual	-2.5168314	3.4447932	.0000000	1.6653394	27
Std. Predicted Value	-1.361	2.508	.000	1.000	27
Std. Residual	-1.481	2.027	.000	.980	27

a. Dependent Variable: FDI

Statistics

Mean	.0000000
Std. Deviation	1.66533938
Skewness	.632
Std. Error of Skewness	.456
Kurtosis	-.583
Std. Error of Kurtosis	.887
Minimum	-2.51683
Maximum	3.44479

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.169[a]	.028	-.012	2.5988939

a. Predictors: (Constant), devalue

b. Dependent Variable: interest

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	4.742	1	4.742	.702	.0410[b]
	Residual	162.102	24	6.754		
	Total	166.844	25			

a. Dependent Variable: interest

b. Predictors: (Constant), devalue

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	6.558	1.067		6.146	.000
	devalue	-.069	.082	-.169	-.838	.0410

a. Dependent Variable: interest

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	4.680156	6.365366	5.772500	.4355329	27
Residual	-3.4903655	5.3265004	.0000000	2.5463856	27
Std. Predicted Value	-2.508	1.361	.000	1.000	27
Std. Residual	-1.343	2.050	.000	.980	27

a. Dependent Variable: interest

Statistics

Mean	.0000000
Std. Deviation	2.54638558
Skewness	.944
Std. Error of Skewness	.456
Kurtosis	.136
Std. Error of Kurtosis	.887
Minimum	-3.49037
Maximum	5.32650

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.307[a]	.095	.057	14.3286337

a. Predictors: (Constant), devalue

b. Dependent Variable: exports

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	514.442	1	514.442	2.506	.127[b]
	Residual	4927.434	24	205.310		
	Total	5441.876	25			

a. Dependent Variable: exports

b. Predictors: (Constant), devalue

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	15.595	5.883		2.651	.014
	devalue	-.716	.453	-.307	-1.583	.127

a. Dependent Variable: exports

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	-3.963149	13.589026	7.414077	4.5362619	27
Residual	-18.4084396	48.5661812	.0000000	14.0391365	27
Std. Predicted Value	-2.508	1.361	.000	1.000	27
Std. Residual	-1.285	3.389	.000	.980	27

a. Dependent Variable: exports

Statistics

Mean	.0000000
Std. Deviation	14.03913646
Skewness	1.674
Std. Error of Skewness	.456
Kurtosis	4.487
Std. Error of Kurtosis	.887
Minimum	-18.40844
Maximum	48.56618

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.023[a]	.001	-.041	18.7390904

a. Predictors: (Constant), devalue

b. Dependent Variable: imports

ANOVA[a]

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	4.468	1	4.468	.013	.911[b]
	Residual	8427.684	24	351.154		
	Total	8432.152	25			

a. Dependent Variable: imports

b. Predictors: (Constant), devalue

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	14.104	7.693		1.833	.079
	devalue	.067	.592	-.023	-.113	.911

a. Dependent Variable: imports

Residuals Statistics

	Minimum	Maximum	Mean	Std. Deviation	N
Predicted Value	12.281221	13.916963	13.341500	.4227481	27
Residual	-34.2366982	54.5702744	.0000000	18.3604839	27

Std. Predicted Value	-2.508	1.361	.000	1.000	27
Std. Residual	-1.827	2.912	.000	.980	27

a. Dependent Variable: imports

Statistics

Mean	.0000000
Std. Deviation	18.36048386
Skewness	.805
Std. Error of Skewness	.456
Kurtosis	2.130
Std. Error of Kurtosis	.887
Minimum	-34.23670
Maximum	54.57027

APPENDIX C   CORRELATION MATRIX

	Devaluation	Inflation	FDI	Saving rate	Export	Import
Devaluation	1.000					
Inflation	(0.173)	1.000				
FDI	(0.452)	-0.357	1.000			
Saving rate	(-0.169)	-0.213	-0.309	1.000		
Export	(-0.307)	-0.312	0.171	-0.125	1.000	
Import	(-0.023)	0.006	0.233	-0.295	0.444	1.000

*. Correlation is significant at the 0.05 level (2-tailed).