The Impact of Currency Devaluation on the Ethiopian Economy

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Abstract

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 the 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 linear regression using 27 years' time series data through SPSS software . Because of the quantifiable behavior of the variables, this study has used quantitative approach to fulfill the major objectives of the research. In addition to this; the overall frame work of the study 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 study suggests a quick structural economic policy reformation in order to tackle the existing 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.

Keywords: *Currency devaluation, exchange rate system, GDP, export, import, inflation rate, FDI, interest rate*

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1. INTRODUCTION

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 (Fratzscher *et al*, 2014).

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 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. 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 impacts on developing countries economy around the world including Ethiopia. For instance, devaluation has short term contractionary effect and long term expansionary effect on the economic activities of developing countries (Eltalla *et al,* 2013). They analyzed the impacts of 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 devaluation on economic activities of Ethiopia. As we know that the simplified assumption of devaluation is to increase exports and to discourage imports so it has the 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 and analyze the impact of devaluation on Ethiopian economic growth by identifying the major causes for the negative impacts of devaluation on Ethiopian economy by testing 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 gaps and to suggests the best possible economic policy that should be applied before using currency devaluation in order to get sustainable economic development in the case of Ethiopia.

In trying to achieve these objectives, this study aimed to identify 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 that are hypothesized to determine the economic performance of the country by analyzing the past 27 years' time series data from 1992 to 2018 in the context of Ethiopia.

2. LITERATURE REVIEW

2.1. 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) 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.

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).

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.

Managed (Dirty) floating exchange rate regime: it 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. 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).

2.2.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).

Encourage Competitive Market: - Devaluation can bring growth through improvements in price competition (Harris, 2001). Ac-cording 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).

Encourage investment- led growth: - 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 (Paul, 2006).

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).

2.3.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. 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.

2.4. 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.

3. RESEARCH METHODOLOGY

This study 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 was adopted to fulfill the purpose of this research, since this study was searching for what factors were affecting economic growth of Ethiopia due to currency devaluation, it enables to measure the relationship between those variables and with the quantitative method it is possible to compare different numerical growth measures. On the other hand this study was designed with a Causal

research, also called explanatory research. It is the investigation of 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). The study has used secondary data from documents of the respective government offices namely National Bank of Ethiopia, Central Statistics Agency, and Ministry of Finance and Economic Development based on the past 27 years country's time series data and supplementary data from publications, published theoretical and empirical studies, World Bank annual country reports, and IMF annual country reports were also used to fulfill the research objectives.

In order to analyze the research data, mediation analysis with multiple regressions was conducted to check the relationship between dependent and independent variables with the mediating role of the intervening variables by using software called SPSS version 24 customized with process macro version 33 in order to test both the direct and the indirect effect and to check whether there is statistically significant relationship between the stated variables or not. Significant tests were conducted to ensure the goodness of the regression model. These includes: (1) Normality test, which was tested using the technique of Bera-Jarque (BJ) and skewness and kurtosis values was also checked (2) Test for Heteroscedasticity, which was tested by employing the White heteroscedasticity test approach and (3) the correlation statistics were examined to check the existence of Multicollinearity problem. 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:

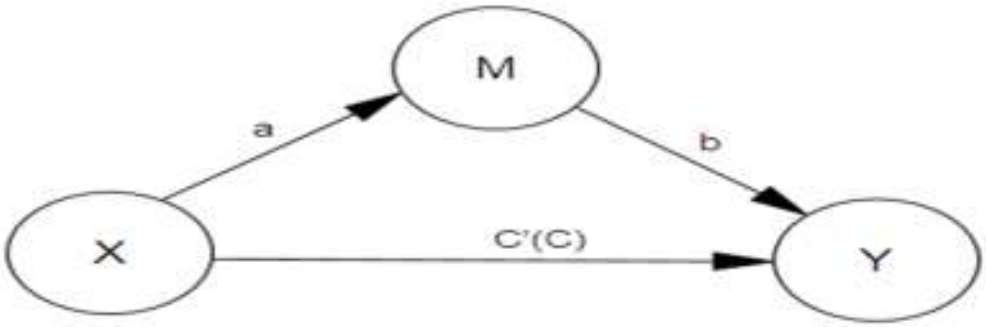

Figure 1: Diagrammatic representation of mediation model

Where Path a, b and c are called direct effects whereas C' is called the indirect effect that means it represents the portion of the relationship between X and Y that is mediated by M.

3.1. Variable definition

This study were examined the cause and effect relationship between one dependent variable GDP, one independent variable devaluation, and five intervening variables export, import, saving rate, FDI, and inflation rate.

Growth Domestic Product (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.

Currency Devaluation: it 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.

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.

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.

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.

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.

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.

3.2 Model Specification

A four step Baron and Kenny (1986) approach was adopted in order to analyze and test the direct relationship between the variables and significance of the coefficients was examined at each step for each model has developed. The following table represent Baron and Kenny direct effect model.

Table 1: The direct effect mediation model

Steps	Description of the models
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 X predicting Y to test for path C alone, $Y = B_0 + B_1M + e$
Step 4	Conduct a multiple regression analysis with X and M predicting Y, $Y = B_0 + B_1X + B_2M + e$

After testing the direct effect, a two-step Sobel Product of Coefficients Approach was adopted to analyze and test the indirect relationship between the variables. 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, $B{:}B_{indirect}=(B_2)\ (B)$. The following table represents Sobel Product of Coefficients indirect effect model.

Table 2: The indirect effect mediation model

Model	*Model specification*
Model 1	$Y = B_0+ B_1 X + B_2 M + e$
Model 2	$M= B_0+ B X+ e$

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 intervening variables, M = intervening variables as a mediator, and e =Error variable.

4. RESULTS AND DISCUSSION

4.1. Results of Descriptive Statistics

This section discusses the results from descriptive statistics analysis. The results of descriptive analysis were processed about the dependent, independent, and intervening variables based on the past 27 years over the year 1992 to 2018. 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 higher, its 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 is 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, it's 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 was 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 import 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 import equals 68% in year 2004 and minimum import growth rate equals -

20.5% in year 1994 when the economy performs less. This shows country's performance in decreasing the rate of growth import was not good and percentage is fluctuating at high amount explained by the standard deviation for the sample period was value of 18.36.

Table 3: Summary Descriptive Statistics

Summary statistics	Dep. variable	Indep. variable	Intervening variables				
	GDP	Devaluation	Inflation	FDI	Interest	Exports	Imports
Mean	7.44	11.42	9.83	2.32	5.77	7.41	13.34
Median	9.52	8.65	10.15	2.05	5.25	3.60	14.05
Maximum	13.57	27.30	33.50	5.46	11.50	58.00	68.10
Minimum	-8.67	2.80	-5.80	0.002	2.86	-11.2	-20.5
Std. Dev.	5.60	6.33	9.72	1.87	2.58	14.75	18.37
Observation	27	27	27	27	27	27	27

4.2.Results of Mediation Analysis with Multiple Linear Regression[1]

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

[11] 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 variables and the indirect relationship between GDP and devaluation. The results of the tests proved that there were no major problems of normality distribution, heteroscedasticity and multicollinearity.

mediating effect and all results were discussed and presented with the reference of 95% confidence interval.

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. From the above regression results 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.

Table 4: Regression analysis between GDP and Devaluation

Variables	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
Model summary: R^2=0.1449; F-statistics =4.2335 ; p value = 0.0507				

Source: Author's estimation (2019)

The meaningfulness of this test has depended on the p-value because the p-value says something about the significance of the result. From the regression result, the calculated p-value is 0.0505; it is greater than the pre chosen significance level so that devaluation is not the determinant of economy in the context of Ethiopia but the result of the direct effect analysis is not enough to make the final decision the indirect effect analysis is must be conducted in order to analyze the mediating effect of the intervening variables on GDP to make the final conclusion.

2. The Relationship between Devaluation and Intervening Variables

From the above mathematical presentation of the regression model, the following interpretations has presented below. In the case of relationship between devaluation and inflation rate, 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. In the case of relationship between devaluation and FDI, 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.

Table 5: Summary of regression analysis between Devaluation and intervening variables

Intervening variables	Coefficient	Standard Error	t- statistics	p-value
Inflation	0.2658	0.3087	0.8612	0.0397
FDI	0.1333	0.0537	2.4821	0.0205
Interest rate	-0.0688	0.0821	-0.8379	0.0410
Export	-0.7164	0.4526	-1.5829	0.1265
Imports	0.0668	0.5919	-0.1128	0.9111

Source: Author's estimation (2019)

In the case of relationship between saving rate and Devaluation, 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.

In the case of relationship between Export and Devaluation, 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.

In the case of relationship between Import and Devaluation, 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.

3. The Relationship between Intervening Variables and GDP

This regression analysis was conducted in order to test the relationship between the intervening variables and GDP. From the results of the regression model, the following interpretations has presented as follows. In the case of relationship between GDP and Inflation, 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.

In the case of relationship between GDP and FDI, 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 & 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. In the case of relationship between GDP and saving rate, 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.

In the case of relationship between GDP and export, 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. In the case of relationship between GDP and Import, 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 before tasting the indirect effect relationship between the stated variables. The mathematical presentation of the regression model is presented as follows.

Table 6: Regression Analysis between GDP and the Intervening Variables

Variables	Coefficient	Standard Error	t-statistics	p-value
Inflation	-0.0861	0.0315	-2.7341	0.0118
FDI	0.036	0.612	1.3106	0 .000
Saving rate	-0.1728	0.1315	-1.3141	0.0099
Exports of goods and services	0.0433	0.0230	1.8780	0.0909
Imports of goods and services	-0.0248	0.0182	1.3627	0.0624

Source: Authors' estimation (2019)

4. The Mediating Effect of Intervening Variables

As the researcher stated earlier, Sobel product of coefficient approach was adopted in order to test the indirect relationship between GDP and devaluation with the mediating role of the intervening variables. 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. The product of coefficient value for the mediating effect of inflation on GDP 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. The product of coefficient value for the mediating effect of FDI on GDP is 0.0047. That means GDP increases by 0.0047every unit increase of devaluation with the mediating role of FDI. 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 = 0.000).Therefore, devaluation has a positive significant impact on GDP with the intervention of FDI.

The product of coefficient value for the mediating effect of saving rate on GDP is 0.0118. That means GDP increases by 0.0118 every unit increase of devaluation with the mediating role of saving 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 saving rate. The product of coefficient value for the mediating effect of export on GDP is -0.0310. That means GDP decreases by -0.0310 every unit increase of devaluation with the mediating role of export. 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 = 0.140).Therefore, devaluation has a negative non-significant impact on GDP with the intervention of export. 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. On the other hand, the product of coefficient value for the mediating effect of import on GDP is -0.0017. That means GDP decreases by -0.0017every unit increase of devaluation with the mediating role of import. 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 = 0.0624). Therefore, devaluation has a negative non-significant impact on GDP with the intervention of import.

5. CONCLUSION AND RECOMMENDATIONS

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. Since the nation's production is highly dependent on imported goods and essential inputs for agricultural products as well. 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. When this policy was applied over and over again, 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. 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). Even though FDI in to 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.

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. So the existing annual saving

interest rate does not have a potential to stimulate level of inflation rate in Ethiopia. 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 before doing depreciation of domestic exchange rate over and over again without achieving a sustainable and attractive changes on economy unless it hearts instead. 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.
- **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 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.

- **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 aggregate demand 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.

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