Hacettepe University Graduate School of Social Sciences

Faculty of Economics and Administrative Science

Department of Economics

DEVALUATION AND ITS IMPACT ON ETHIOPIAN ECONOMY

Medina Mohammed Umer

Master's Thesis

Ankara 2015

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KABUL VE ONAY

Medina Mohammed Umer tarafından hazırlanan "Devaluation and its impact on Ethiopian Economy" başlıklı bu çalışma, 22 Haziran 2015 tarihinde yapılan savunma sınavı sonucunda başarılı bulunarak jürimiz tarafından master tez olarak Kabul edilmiştir.

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ÖZET

[UMER, MEDINA MOHAMMED]. [THE IMPACT OF DEVALUATION ON ETHIOPIAN ECONOMY], [Master tez], ANKARA, [2015]

Bu tezin amacı Etiyopya ekonomisi için Mareşal Lerner koşulu geçerliliğinitest etmektir. Bu amaçla, ithalat ve ihracat denklemleri EKK yöntemi kullanılarak tahmin edilmektedir. Tahmin sonuçları yine kısa vadede artırmak için ülkenin ihracatını götürecek kur ve ihracat ve devalüasyon arasında pozitif bir ilişki olduğunu göstermektedir, devalüasyon alma azalmaz. Ithalat katsayısı istatistiksel olarak anlamlı olmadığından, Marshall Lerner koşulu ithalat ve ihracat esneklik mutlak değerinin toplamı daha büyük 1.Cointegration teknikleri de arasında uzun dönemli ilişki görmek için kullanılır olsa bile Etiyopya ekonomisinde tutmaz ihracat ve ithalat denklem hem değişkenleri. Sonuçlar bu tür ihracat, döviz kuru ve dünya gelir ve böyle bir ithalat, döviz kuru ve yerli milli gelir olarak ithalat denklemi olarak ihracat denkleminin değişkenler arasında uzun dönemli bir ilişki olduğunu göstermiştir.

Anahtar Kelimeler

Devalüasyon, Döviz Kuru, İhracat, İthalat, Marshall Lerner Durum

ABSTRACT

[UMER, MEDINA MOHAMMED]. [THE IMPACT OF DEVALUATION ON ETHIOPIAN ECONOMY], [Master's thesis], ANKARA, [2015]

The aim of this thesis is to test the validity of Marshal Lerner condition for Ethiopian economy. With this aim, import and export equations are estimated by using the OLS method. Estimation results show that there is a positive relationship between exchange rate and export and devaluation will lead the nation's export to increase in the short run nevertheless, devaluation does not decrease import. Since the import coefficient is not statistically significant, the Marshall Lerner condition does not hold in Ethiopian economy even if the sum of the absolute value of elasticity of import and export is greater than 1.Cointegration techniques are also used to see the long run relation between the variables of both the export and import equations. The results indicated that there is no long run relation between the variables of the export equation such as export, exchange rate and world income and the import equation such as import, exchange rate and domestic national income.

Key Words

Devaluation, Exchange Rate, Export, Import, Marshall Lerner Condition

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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, Duca and Straub, 2014)

Back in the days, Countries were allowed to use trade barriers to limit their imports from and exports to the international market but as time goes on, and free trade became the most emphasized element among the nations, the role of trade barriers became insignificant and the only means of affecting the nation's competence in the international market became devaluation. In today's world, devaluation is one of the best successful policies in making exported goods cheaper and imported goods expensive so that the country's export will be encouraged were as its import will be discouraged. As a result, the nation may be able to solve its balance of payment deficit through devaluation. (Mannur, 1995:340)

The unfair allocation of the world's natural resources enforce countries to engage in different kinds of international trade since some countries like the Middle East, have an abundant natural gas resource while some others like African countries have diamond, gold and other precious metals. There is no nation which can satisfy all of its citizen's demand domestically without importing and all of its producer's excess

supply without exporting. Therefore, international trade is a must that all countries need to take part in.

As long as resources have allocated in unjust way across the globe, the need of international trade is very significant and it is the only means of reallocating the existing resources all over the globe. Though the abundant existence of natural resources in some specific countries is taken as a source of conflict and instability in many of the cases, it is also the back bone of the nation's GDP and it has the lions share from the overall export of many of the mineral exporting countries. Therefore, it's obvious that countries would participate in some kind of profit maximization strategies given their exportable goods and among the strategies some of them are mentioned as follows; imposing different entry barriers like quota and tariff on imported goods, devaluating the domestic currency against other currency, giving some subsidies and incentives for the domestic producers, and tax exemptions on exportable goods and so forth

Most of the third world countries are incapable of giving subsidies and essential incentives for the producers and exporters at the mean time, the government would be out of the track if it applies the tax exemption policy and the civil servants and the government institutions would be totally under the control of the foreign donors, lenders, and international financial institutions therefore, the last two strategies wouldn't work for LDCs in general and sub Saharan African countries in particular even if they are effective for some countries which experience budget surplus in their economy. The first strategy wouldn't work either due to the effect of globalization and the free trade treaties which were signed by the member countries of the WTO (World Trade Organization) therefore, devaluating the domestic currency would be the only means of affecting the nation's foreign trade.

Like any other countries, Sub Saharan African countries are also engaged in international trade for several decades in fact, they are not lucky enough to experience positive trade balance. That is why they are mostly unable to cover their expenses by

themselves and mostly they are looking for international financial assistance like loan and donation in order to alleviate their trade deficit. As a result, they are not even capable of covering all the expenditures of their government by themselves let alone giving subsidies and tax exemptions for the producers and exporters therefore, the only strategy that need to be taken in to consideration is the devaluation.

Surprisingly, developing countries like Ethiopia are frequently devaluating their currencies and still they have a negative trade balance and this fact motivates the researcher to do a thesis on the topic. The basic questions that the researcher raised were why Ethiopia has a trade deficit even after devaluating its currency significantly? Does the Marshall Lerner condition works for all of LDCs? Could devaluation actually be able to decrease the trade deficit of one of the sub Saharan African Countries, Ethiopia?

The general aim of the study is to evaluate empirically whether the ongoing devaluation helps Ethiopia to have a better trade balance or not. Specifically, this study aims to see the impact of devaluation on the nation's export and import by estimating an export supply and import demand functions first, and to see if Marshall Lerner condition holds in Ethiopian economy second. The study aims to examine if import and export are the function of exchange rate devaluation, if devaluation actually has a positive impact on Ethiopian trade balance regarding with decreasing imports and increasing exports both in the short and in the long run and if it hasn't, what kind of policies need to be emphasized to let the economy grow up and create more job opportunities for the people.

The study has a significant importance in empirically testing the relationship between devaluation and imports and exports or devaluation and foreign trade of Ethiopia. The paper would also be an eye opener for the policy makers in terms of giving them essential information on the effectiveness of the policy of devaluation in making the nation's foreign trade better off. In addition, the paper would also be the base for other research works and further studies on the topic.

The study is organized in five chapters. The first chapter consists of the theoretical literature review on the different exchange rate regimes like free floating, fixed, managed floating, auction exchange rate regime and dollarization and the three different approaches of devaluation namely, the elasticity, income and absorption approach.

The second chapter discusses about the empirical literatures of the economic effects of devaluation on developed as well as developing nations. This chapter has three sub topics in which the effect of devaluation on developed countries, developing countries and Ethiopia have considered in detail.

The third chapter gives detail information about Ethiopia's geographical location, its natural endowments, and the nation's economic outlook including the nation's exchange rate regimes during the last three different governments, its trade balance, and the monetary and fiscal policy.

The forth chapter consists of models which the researcher used to examine the effectiveness of devaluation on Ethiopian economy. Import and export equations are estimated for Ethiopian economy by using the OLS method to test the validity of Marhall Lerner condition. Adequate statistical and econometric analyses are used to assure the validity of the model. Lastly, Chapter five concludes the thesis by describing the main findings.

CHAPTER 1

TRADE, EXCHANGE RATE SYSTEM AND THE THEORY OF DEVALUATION

Trade is the process of transferring the ownership of a good from the seller to the buyer by getting money, or another product or some services in exchange from the buyer either at domestic international market. The words "exchange" and "trade" stands for two similar ideas of exchanging materials, or services voluntarily to one another. The word “exchange” explicitly refers the transfer of the ownership of a commodity from the seller to the buyer between neighbors in the domestic market whereas, the word “trade” refers the international transaction of goods and service of different countries across the globe. (Jevons, 1900)

There are different reasons for the need of the existence of trade between different nations to mention some of them, the existence of comparative advantage over some products for each of the nations, differences in specialization, the existence of division of labor, different allocation of natural resources, the need for the better utilization of natural resources, and it is the means of achieving efficiency in the world economy. Since trade facilitates more investment through enhancing the probability of getting the needed input either non processed or intermediate goods from nations which have a comparative advantage over it, innovation most likely will enhances and the overall investment of both nations will improve and lead the economy to grow up sustainably. (http://www.imf.org/external/pubs/ft/fandd/basics/trade.htm,

Trade plays a significant role in determining the nation’s economic strength. Since many of the nations were took part in the First World War, they were mostly had trade with the nation who were in their political alliance during the war and this fact proceed for some years even after the war got its end. Similarly nations were employing trade barriers among each other so as to keep their domestic economy as strong as possible

however, less trade facilitation leads the world to face a serious economic recession and finally the Great Depression happened. Great Depression was a big deal from 1929-1930s and many countries experienced recession on their economy and lack of free trade was the concrete reason for the great depression. (Irwin, 2012: 3-4)

Although trade has too much importance for nation's economy, governments might employ some restrictions on international trade by realizing sanctions, or other trade barriers against their trade partners due to different reasons like protecting domestic infant industries, social and political security and the like.

1.1. EXCHANGE RATE SYSTEMS

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

According to (Klein and 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, there are also other exchange rate regimes like dollarization and auction exchange rate regime. (Aron and Elbadawi, 1994)

Main Exchange Rate regimes

As it is mentioned before, the main exchange rate regimes are:-

1.1.1. **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. These fluctuations will lead us to say that there is either depreciation or appreciation of domestic currency.

Depreciation: is the loss of value of a country's currency with respect to another currency. In other words if the nation obligated to use more domestic currencies in order to get the same amount of foreign currency, we call the domestic currency loses its purchasing power or depreciated. The reverse is called appreciation. (Calvo and Reinhart, 2000) describes that depreciation of domestic currency occurs when the central bank increases the money supply and which is highly related to inflation although the empirical result of the paper which was conducted by (Kiguel and Ghei 1993) in the case of developing nations evidenced that most depreciations are not caused by inflation and the effect of inflation on exchange rate depreciation is almost negligible.

Depreciation makes the price of domestically produced goods to be cheaper in the world market while their production cost remains the same so that, the traded goods gets more demand and export becomes more promoted on one hand and relative price of imported goods become more expensive so that, import get discouraged while export get promoted and the nations BOP account get improved.

Appreciation: refers to an increase in the value of domestic currency with respect to other foreign currencies. In other words, if the nation can purchase the same amount of foreign currency by using less amount of domestic currency then we can say that the nation’s currency has got appreciated. Appreciation makes imported goods to be cheaper in domestic market while it discourages exports through decreasing the foreigners demand for domestically produced commodities following the relative price increase caused by currency appreciation. The nation may face BOP deficit after the implementation of currency appreciation.

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 suppose 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.

Exchange Rate Volatility - Federal Reserve Bank of Kansas City (http://www.kansascityfed.org/publicat/ECONREV/EconRevArchive/1984/3q84hakk.pdf,

1.1.2. 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.

"*If a monetary shock causes inflation, it will also tend to depreciate a floating exchange rate and thus transmit a nominal shock into a real one. In this setting, the fixed exchange rate provides a mechanism to accommodate a change in the money demand or supply with less output volatility*". (Calvo and Mishkin, 2003)

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 (Asmamaw, 2008)

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.

Disadvantages of fixed exchange rate regime

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. And the nation may obligate to ask for either foreign aid or foreign loan. For instance, According to (Calvo and Mishkin, 2003) the governments of Thailand, Malaysia, South Korea and other nations in that region had kept exchange rates fixed for years and the rates had been stable for long enough. Therefore, local financial institutions were borrowing in dollars abroad and then loaned freely in U.S. dollars to domestic borrowers. But when foreign investment got stopped, the existing exchange rate became unsustainable and this results a contract on their economy. Empirically, when the Thai baht collapsed against the U.S, dollar and the exchange rate got depreciated, Thai borrowers were unable to repay their loans in US Dollar therefore Thai financial institutions were also unable to pay back the money for its lenders of another countries central banks, multilateral and transnational organizations, as well as the private creditors and this resulted an economic contraction of Thai.

In fixed exchange rate system the government has to forget to play with the monetary policies in order to stabilize the economy. (Obstfeld and Rogoff, 1995), As Mundell-Fleming model describes, it is impossible to attain 1.perfect capital mobility, 2.fixed exchange rate and 3.domestic monetary autonomy simultaneously and we call it “The Impossible Trinity”.(Pandey, 2006). Balance of payment consists both Current and Capital accounts and balance of payment equilibrium (BP = 0) could be achieved when Net Export of the Current Account and Net Capital Outflow of the Capital Account get their equilibrium. In Order to affect the BOP account the government can play with monetary and fiscal policies but monetary policy is not going to be effective in case of fixed exchange rate system because, an increase in money supply can improve people’s income to some extent and this leads import demand to grow up relatively more than that of demand to export therefore, Net Export becomes negative. Similarly, an increase in money supply leads interest rate to decrease and this results capital outflow and deficit in Capital Account. As we know in fixed exchange rate regime, the government has to offer hard currency when there is a shortage in the

market. Therefore, by selling hard currency government would collect the domestic currency and let the money supply to return back to its previous position.
(Pandey, 2006: 3-9)

1.1.3. 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 Mark P Taylor www.cepr.org/pubs/pbs/DP2690.asp,

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)

Disadvantages of Managed Floating Exchange rate regime

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)

To sum up, the advantage of managed floating regime is that, it consists of the good parts of both fixed and floating exchange rate systems. And the central bank can

intervene highly to the foreign exchange market when there is high instability in the market and the vice versa. The disadvantage of the system is that, it is not easy to know the exact time in which the central bank should intervene and to what extent it should intervene. It's impossible to know the exact amount of intervention which is needed from the central bank in order to adjust the foreign exchange market accordingly.

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.

1.1.4. Dollarization

"It can be defined as the holding by residents of a significant share of their assets, in the form of foreign currency-denominated assets. Usually, it is differentiated between official or de jure, and unofficial or de facto dollarization. The former refers to the case in which foreign currency is given (typically exclusive) legal tender status. This implies that the foreign currency is used for purposes a currency may have, including as a unit of account for public contracts. De facto dollarization represents the situation of a foreign currency being used alongside the domestic currency as means of exchange (for transaction purposes, i.e., as currency substitution) or as means of saving in hard currency (i.e., as asset substitution)". (Alvarez-Plate and Garcia-Herrero, 2008).

Full dollarization occurs when every inhabitants of the nation starts using a foreign currency instead of the domestic one and we can take Zimbabwe as an example. As (Berg and Borensztein, 2000) stated, Full Dollarization has some advantages.

Advantages of Dollarization can be stated as follows;

It eliminates the risk of a sudden and sharp devaluation of the country's domestic exchange rate; it also avoids currency and balance of payments crises. If there is no domestic currency, there will never be a sharp and sudden change in the value of domestic currency (depreciation or appreciation of domestic currency will not happen in the economy) therefore; sudden capital outflow motivated by fear of devaluation will no longer exist in the dollarized economy.

Dollarization enables the nation to reduce the risk premium attached to its international borrowing, the economies could enjoy a higher level of confidence among international investors, it may let them to enjoy with the Lower interest rate spreads on their international borrowing, reduced fiscal costs, and more investment and growth, since Dollar has lower transaction cost and assured stability in its prices, the nation who realized dollarization will become more integrated with both the global and U. S. economies and more importantly it definitely rejects the possibility of inflationary finance and which enables countries to strengthen their financial institutions through creating a positive attitude towards the domestic and international investors mind about the promising nature of investment in that nation.

Disadvantages of dollarization can be stated as follows;

Even though dollarization has different advantages in once economy, it has also disadvantages as it is described by (Berg and Borensztein, 2000). These are:

Dollarizing countries has no right to decide about the symbols and pictures which are printed on Dollar as a result, they are unable to use the symbol of their nationhood,

and the nation to some extent could be politically dependent. In addition, the dollarizing nation is no longer earns the so called seigniorage revenues because this type of revenues are collected by the central bank when it issues domestic currency. Seigniorage is considered as the central bank's profit in non Dollarized nations and it is mostly transferred to the government but in the case of Dollarizing nation, the profit will be transfer to the government of U.S. unless and otherwise the nation agreed to share the profit with the government of U.S. Moreover, the dollarizing country couldn't have any autonomous power regarding with its monetary and exchange rate policies and the central bank might not be able to freely provide credits in order to make a liquidity support to the banking system even during the time of emergency.

1.1.5. Auction Exchange rate regime

From economic point of view, auction is a means of trading foreign exchange. (Asemamaw, 2008) described it as follows; - Auction is a system in which buyers enter competitive bids and sellers enter competitive offers at the same time. The price that the foreign currency is traded represents the highest price that a buyer is willing to pay and the lowest price that a seller is willing to sell at. Matching bids and offers then taken place and the monetary authority sell currencies. The system will take place by making bidders to submit their bids to the central bank. Auctions may conducted every day or once in a week or in some specific time interval. Bidders may obligated to use a standard bid form and bring some other specified supporting documents, like import license, letters of credit, pro forma invoice, etc. Bids could be submitted for either one hard currency or different hard currencies such as US dollars, British pounds, German marks, French francs and Japanese yen according to the central bank rules. If the central bank uses different currencies, then it should announce the type of currency and the total amount of currency supply which is going to be sold, by doing so they can reduce uncertainty. A bidder should also state the currency, the amount being bid for, and the bid price he /she is willing to pay.

According to (Elbadawi, 1994) two types of foreign exchange auction could be employed in an economy (as it was employed in sub Saharan African countries) these are:-

1. **Retail auctions**: - In this type of auction the bidders are importing companies, private and public sectors but not Banks. This system gives an opportunity for some importers who got the priority by the central bank to buy foreign currency from the banks at relatively lower price than the black market price. But if the nation is one of Least Developed Countries, since there is high shortage of hard currency reserve in the central banks of such nations, importers who don't get the chance to buy foreign exchange from banks will go to parallel markets and the demand for black market will increase.

2. **Wholesale auctions**: - in here the bidders are banks and foreign exchange dealers. Since the probability of importers to take part in such a kind of auction is restricted, banks will compete more freely.

As (Aron, and Elbadawi, 1994) described, there are two kinds of auction pricing mechanisms; first the discriminatory or the so called "Dutch auctions" in which the bidders pay their own price for each single unit where as in the second competitive auction the bidders pay the lowest accepted bid price for every unit.

The authority may set as less price as possible if it plans to make importers buy the currency directly from the banks and to weaken the existence of black market. On the other hand, it can let the price to be a bit expensive if it plans to narrow the gap between the bank's price and black market's price of foreign currency.

As (Asemamaw, 2008) describes Auction exchange rate system has some objectives or importance.

Auction Exchange Rate system has some advantages such as: First, the gap between official exchange rate of the banks and parallel exchange rates like the black market's

price for foreign currency could be significantly narrow. Second, if real depreciation occurs in a nation, using auction exchange rate system will help to stabilize the foreign exchange rate. In addition, auction market may enable the official exchange rate to be equal to the market clearing point and liberalized and competitive financial system could be realized.

1.2. THE THEORY OF DEVALUATION

Devaluation is an official downward adjustment to the value of the nation's currency, relative to another currency, group of currencies or standard. Or devaluation is a means of letting the devaluating country to lose some percentage of the value of its currency relative to dollar or any other currencies. (Folks and Stansell, 1979)

Devaluation is often confused with depreciation, and is in contrast to revaluation. Even if the domestic currency becomes relatively weak in both of devaluation and depreciation cases, the type of exchange rate regime is different for them. Devaluation can occur either in fixed or managed floating exchange rate regime and the government has some rights over controlling the foreign exchange market whereas, depreciation occurs only in free floating exchange rate regime and the government never decide about the value of domestic currency, which is fully decided by the market's demand and supply interaction.

On the other hand, revaluation is a calculated increment to a country's official exchange rate relative to some other currencies or standard measures like gold. Revaluation occurs either in fixed or managed floating exchange rate regimes and the decision of the price of domestic currency that is exchanged for another currency is made by the central bank. In contrast, when the price of domestic currency increases through the demand and supply interactions, without any intervention of the government, it's called appreciation.

There is debate on the effectiveness of devaluation in improving the nation's trade based on their theoretical and empirical researches. According to (Solomon 2010), the application of Devaluation in an economy might result contraction of both aggregate demand and aggregate supply. To start with the reasons that make aggregate demand to contract following the adoption of devaluation as a policy measure; devaluation results a redistribution of income towards those with high marginal propensity to save. In other words, exporters who have high marginal propensity to save would be

beneficiary from devaluation and the nation's aggregate demand would remain constant. As a result, a fall in investment would be a case or it could stay stagnant.

Devaluation leads to a low government marginal propensity to spend out of tax revenue. This is specially a case if the nation imports machineries or other construction materials in order to realize infrastructures or other government projects.

Real income declines under an initial trade deficit which happens following the adoption of devaluation in the economy. In other words, whenever devaluation implemented in an economy, both importers and export suppliers will not react immediately either to decrease the volume of imports or increase the level of export since contracts has to be signed couple of days before trade therefore, the nation's trade balance would face deficit immediately after devaluation and leads real income to decrease. Devaluation could also results reduction in real wealth. When one nation "Nation A" devaluates it's currency against the other nation "Nation B" may also devaluates it's currency against the first country "Nation A" and by doing so both nations may discourage their import demands while their export demand remains unchanged and this may results a reduction in total output of both nations.

Reasons which make aggregate supply to decrease following the realization of devaluation are:-

Firstly, more expensive imported production inputs; if exporting companies use imported goods as an input, devaluation would be discouraging for the companies that import production inputs and it would have an adverse effect on the aggregate supply of exportable goods.

Secondly, a frequent devaluation stimulates speculation and leads to confidence erosion; Continuous devaluation makes the domestic currency to lose its purchasing power continuously so that it creates distortion in many economic variables such as house hold real income, consumption, industrial growth, public finance, imports,

exports, manufacturing growth, money supply and the like. It is known fact that if the consumers consumption pattern decreases, the producers production pattern also decrease and the companies production pattern has a direct relationship with public finance or government revenue.

Thirdly, demand for export is not only determined by export prices but also on trade reliability, perception of the inhabitants of importing nation towards the quality of the product to be exported and the like. Therefore, the nation's aggregate supply might decrease following the adoption of devaluation if there is no change in import demand of the importing nations of our export commodities. (Solomon, 2010)
In contrary, according to expenditure switching policy, devaluation makes imported goods expensive in domestic market and exported goods relatively cheaper in the world market. As a result, the nation's trade balance improves following the adoption of devaluation.

On the other hand, (Bahmani-Oskooee and Niroomand, 1998) described that the effect of devaluation on trade balance could be determined by the sum of elasticity of demand for import and export in absolute value. If the sum of the absolute value of elasticity of demand for import and export is greater than1, devaluation results improvement for the nation's trade balance and if it is less than 1, the trade balance gets more worsen as devaluation adopted as a policy.

Devaluation has its own effect on the nation's trade balance and different countries would like to adopt devaluation as a monetary policy, so as to overcome their economic constraints caused by over valuation of their own currency but the effect of devaluation on developed countries is quite different from that of the developing ones. This reality leads economists to come up with three different approaches of devaluation namely the elasticity approach, the absorption approach and the monetary approach.

1.2.1. Elasticity Approach

According to (LeKhalk, 2006) elasticity approach is all about two important models that are the Bickerdike-Robinson-Metzler (BRM) model and Marshall-Lerner (ML) condition. Both of the models are tries to look at the responsiveness of demand for imports and exports following the adoption of devaluation in once economy.
Bickerdike-Robinson-Metzler (BRM) model was described by Bickerdike in 1920 for the first time but later on it got developed by Robinson and Metzler in 1947 and 1948 respectively. This model checks the response of imports and exports following change in price caused by the realization of devaluation. (Le Khak, 2006)

Assumptions of the BRM models are; there are only two countries, two commodities, initially the market is at its equilibrium level, and there is free trade in the economy.

The model did formalization in order to separate export and import markets of the two nations and finally reach at one statistical model that enables to show the elasticity of imports and exports as exchange rate changes of devaluation. According to (Le Khak, 2006:6) the model can be stated as follows:-

$$\frac{dB}{dE} = (P_x X^s \mid (1+\varepsilon)^{\eta *} / (\varepsilon+\eta^*) \mid) - (P_m M^d \mid (1-\eta)\varepsilon^* / (\varepsilon^* + \eta) \mid) \qquad (1)$$

Where dB is stands for the derivative of trade balance and dE is also the derivative of nominal exchange rate. P_x is an export price while P_m represents the import price. X^s and M^d are domestic supply and demand for export and import respectively. Similarly **ε** and **η** are represent the absolute values of elasticity of domestic demand for export and import respectively and **ε*** and η^* are stands for the foreign price elasticity of export and import demand respectively.

The model tells us that a change in exchange rate will affect the trade balance depending on the values of price elasticity of domestic supply and demand. If | **ε** | > | **η** |If the absolute value price elasticity of export supply is greater than that of import

demand, the nation's trade balance would be improved after the adoption of devaluation and the vice versa. (Le Khak, 2006)

It got its name after the English economist called Alfred Marshall (1842-1924), Romanian economist Abba Lerner (1903-1982), and John Robinson (1903-1983) and sometimes it's called (MLR condition). (Kenen 2000: 323). The Marshall-Lerner Condition states that a change in exchange rate (devaluation) can improve the trade balance and BOP as well if the sum of the absolute values of elasticity of demand for import and export is greater than 1.
(http://glendon.yorku.ca/sites/xavierhome.nsf/00a275e5bafb6d458525647900760437/4f350d7b79a4a

The Marshall-Lerner condition assumes some simplifying assumptions to show the impact of change in exchange rate on the trade balance. These assumptions are: (1) Trade is initially at its equilibrium level. (Le Khak, 2006). (2) Supply of both domestic and foreign currencies is not affected by any factors other than changes in the relative price of currencies which results from exchange rate changes itself. That means everything which may affect the supply of domestic and foreign currency is constant except change in the relative price of currencies because of change in the exchange rate. (Lencho, 2013)

Third, the demand for both domestic and foreign currencies is also not affected by other factors rather than the change in the relative price of currencies due to the change in exchange rate. Lastly, the supply elasticity of domestic goods to be exported and the demand elasticity of foreign countries to import our products as a relative price changes because of change in exchange rate is infinity. As a result, change in demand doesn't results change in price, the price of imported goods in international market, exported goods in domestic market and import and export substitute goods will stay constant and only the relative price of imported or exported goods can be changed as exchange rate changes. (Lencho, 2013)

The nation's trade balance is the difference between exports and imports. And it is standard to measure a country's trade balance in terms of home goods. Which is mathematically expressed as follows:-

$NX = X - RM$, $R = EP^*/P$, substitute for R

$$NX = X - (EP^*/P)\, M \qquad (2)$$

Where P is the price of domestic goods in domestic currency, P* is price of foreign goods in foreign currency, M is volume of imports of the domestic country, X is volume of exports of domestic country, NX is the net export of the nation (export surplus or trade surplus) and R is the real exchange rate (it is the relative price of foreign goods to domestic goods and can be computed by multiplying the domestic spot rate with the price of foreign goods and divide it to the price of domestic goods in domestic currency.

The first order derivative of NX with respect to R from equation (2) can be written as

$$dNX/dR = X_R - RM_R - M \qquad (3)$$

According to (Asmamaw, 2000), trade balance could be affected by the above three different variables those are import, export, and exchange rate.

Theoretically it is known that devaluation promotes export of the devaluating nation by making the price of exported goods relatively cheaper in the world market. Likewise, the relative price of goods which are produced in other countries could be expensive in the domestic market of the devaluating nation therefore the demand for the goods of devaluating nation could increase both in domestic and international market; as a result, the nation's trade balance could reach some improvement following the adoption of devaluation and we call this event a quantity effect. But sometimes, the nation's import demand will increase as a result of currency devaluation, in this case, the nation's trade balance may worsen as devaluation realized and we call it price effect. Since there are both positive and negative

consequences of the realization of devaluation, we need to check which effect is affecting more and weather devaluation can improve the trade balance or not. Therefore, if devaluation is needed to improve the trade balance, the sum of elasticity of the foreign price of demand for exports and domestic price elasticity of imported goods have to be greater than one. (Lencho, 2013)

Mathematically:-

$$|\varepsilon_X + \varepsilon_M| > 1 \qquad (4)$$

Lencho, (2013) has also mathematically stated the Marshal Learner condition as follows by using the above mentioned equation (4)

$$dNX = X(\varepsilon_X + \varepsilon_M - 1)\, dE \qquad (5)$$

Where X is the initial amount of export in which equilibrium trade balance has reached (X=M), dE is change in exchange rate, dNX is change in trade balance (Net export), ε_X and ε_M are elasticity of export and import respectively. Whenever $\varepsilon_X + \varepsilon_M > 1$, a change in exchange rate (devaluation of domestic currency) will have a positive effect on the trade balance and the vice versa.

According to (Le Khak, 2006) Marshall Lerner Condition is a development on the previous equation (1) of elasticity by adding just one assumption and that is the elasticity of both imports and exports are infinity. And (Le Khak, 2006) describes the final equation as follows:-

$$dNX^* = X^*(Nx + Nv - 1)(de/e) \qquad (6)$$

Where dNX is stands for the derivative of Net Export (trade balance) and de represents the differential of exchange rate. X , Nx, Nv and e represents export, export elasticity, import elasticity and exchange rate respectively. And the stars denoted for the values of the coefficients in foreign currency. Le Khak, (2006)

Like (Lencho, 2013), (Le Khak, 2006) is also expressed that following the adoption of devaluation, balance of trade will improve if and only if the sum of the elasticity of demand for imports (domestic demand for foreigners commodity and foreigners demand for domestically produced goods) exceed 1.

To sum up, if we start our analysis from assuming that trade was initially balanced, the M-L condition will tell us devaluation will improve the trade balance if and only if the sum of the price elasticity of demand for export and import in absolute value is greater than one. If the sum is less than unity, devaluation will creates a worst condition for the nation's current account balance. On the other hand if the sum of price elasticity of demand for import and export is equal to zero, devaluation will never have any effect on the trade balance. (Asemamaw, 2008)

Though Marshal Lerner condition is a necessary condition to affect trade balance, it is not a sufficient condition and it has some limitations. (Le Khak, 2006)

The limitations of Marshall-Lerner condition can be described as such; the model assumes that export and import elasticity are infinite but in reality the above assumption will be easily disproved. Devaluation may not necessarily make trade balance better off because trade balance is not only related with exchange rate but also with the potential production and supply of the nation's output. (Yi Chung) describes that, if a nation has a comparative advantage over fishing like Bangladesh, and if it realizes devaluation in the economy, the nature of fish will not allow them to exploit too much fishes beyond its capacity therefore, even if the demand for fish is very high, the suppliers might not be able to offer the demanded amount of supply and which results an increment in the price of a fish rather than improving the trade balance.

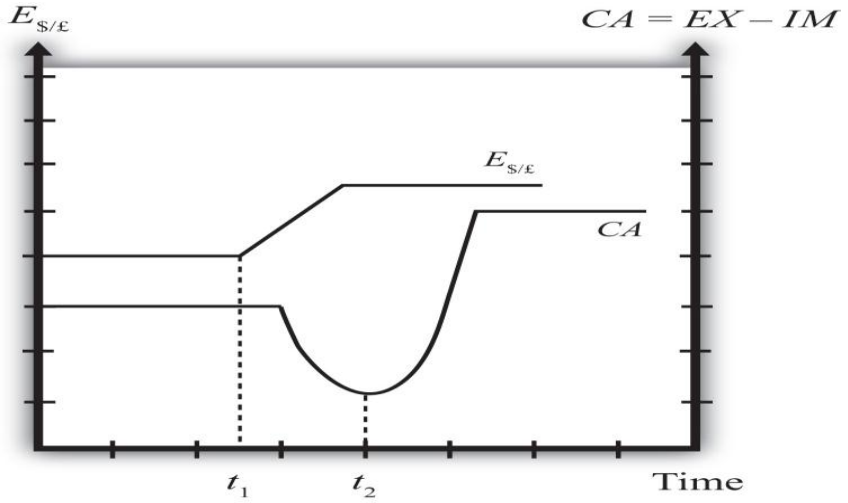
There are difficulties in the availability of data during the process of testing the Marshall-Lerner condition. As (Le Khalk, 2006) described the reasons mentioned by (Yi Chung), in order to know the elasticity of imports and exports, it is must to know

the average price of import in both in base year and current year, average quantity of import both in base and current year, average price of exports both in base and current year and average quantity of export both in base and current years. But it is impossible to know the exact average of price or quantities of every economy. According to United Nations report of October 2010, almost all of Oceania countries, more than 80% of Asian countries and even USA conduct economic census in a five years interval and this culture has its own bad image on the quality of basic economic statistics as well as its comparability therefore, In order to have more reliable data, nations have to conduct census in a yearly bases (UN report, 2010)

Therefore, it is impossible to test the Marshall-Lerner condition where there is no adequate and exact information.

In the countries where the Marshall-Lerner condition holds, following the actualization of devaluation, a slight increase in the level of trade deficit could be observed at the beginning and when time goes on, trade surplus could be observed due to the fact that devaluation makes exported goods cheaper for international buyers and imported goods expensive for domestic consumers in the long run and which is called J curve effect. (Petrović, and Gligorić, 2010)

Figure 1 **J- Curve effect**



Source: -Suranovic, (2010: 10)

J curve occurs when the trade balance initially deteriorates for a while and got improved following the adoption of devaluation as a monetary policy. On the other hand, if a nation realizes revaluation of domestic currency, the inverted J curve would be observed. As we can see from the above diagram, after the implementation of devaluation as a policy, trade balance (net export) has aggravated but after a while it starts to improve. This shows us that elasticity is low in the short run. (Le Khalk, 2006)

Though it is a known fact that theoretically devaluation can improve balance of trade through making the domestically produced and exportable goods cheaper in the world market and imported goods expensive in domestic market simultaneously, its immediate result is aggravating the trade balance.

(Asmamaw, 2008) has also described that in the short run, devaluation might not result a better trade balance due to the fact that the volume of imports would not shrink immediately whereas the price of exportable goods gets cheaper as soon as devaluation applied in the economy and which leads the nation's trade balance to deteriorate but as time goes on, both importers and exporters would adjust their import demand export supply according to the new rate of exchange. As a result, the nation would experience a better trade balance in the long run.

There are few reasons for short run trade deterioration that are: The existence of gap in information. (Asmamaw, 2008), there might be unchanged quantity of imports and exports in the short run even though the relative price of the commodities have changed. Furthermore, the existence of contracts among international traders makes quitting or changing the already signed contracts impossible just because of the change in the relative price of the commodity caused by devaluation. Therefore, the import and export quantities could remain constant in the short run irrespective of the relative change in the price of the commodities. (Le Khalk ,2006)

The above mentioned reasons enforce trade balance to deteriorate initially and then it will improve after the importers and exporters are adjusted both their contracts and

supplies according to the relative price changes. In fact, no one knows for how long the trade deterioration will proceed. (Le Khalk, 2006)

1.2.2. Absorption Approach

As we have seen before in the previous approach, the aim of devaluation is making the nation's trade balance better off through increasing exports and decreasing imports. But the elasticity approach alone seems insufficient to assure the nation's economic wellbeing after the implementation of devaluation and how the nation will react following devaluation should also be taken in to consideration. In other words, in order to say whether devaluation has a positive or negative effect on the trade balance, even if the condition of elasticity approach got satisfied, we need to consider whether the condition of absorption approach is satisfied or not i.e. how the nation will react in terms of production, supply and spending for the changes in exchange rate devaluation. In fact, the absorption approach goes beyond the elasticity approach, and tries to explain the impact of devaluation on trade balance by using important macroeconomic variables. Similarly, (Kemal and Qadir 2005: 179) described that, if elasticity of demand for both import and export is large enough and elasticity of supply is small enough, then devaluation definitely improves the trade balance. In other words, whenever devaluation applies in the economy, it would have an adverse effect for the suppliers since it reduces the relative price of the commodity that they produce therefore, if the price elasticity of supply is small enough and price elasticity of demand is large enough, devaluation results improvement in the trade balance and BOP as well.

It is a well known fact that balance of trade is the difference between the total domestic output and the domestic absorption or in other words balance of trade is the subtraction of domestic absorption from total domestic output. The difference could be positive if the total domestic output exceeds the domestic absorption, which is the domestic spending on imported goods, and which is called trade surplus. In contrary if

the difference is negative, we call it trade deficit and which occurs when domestic spending exceeds from the total domestic output.

As (Lencho, 2013) described, the absorption approach starts with the assumption that the value of total domestic output (Y) is equal to the level of total spending, where total spending is consists of four macroeconomic variables that are consumption (C), investment (I), government expenditure (G) and net export (X-M). This can be written as:

$$Y = C + I + G + (X - M) \quad (7)$$

The absorption approach consist the three economic aggregates that are C, I and G. 'A' stands for the C + I + G for the sake of convenience and made 'Z' stands for net export (X –M). Therefore, Total domestic output became the sum of absorption and the level of net exports (X - M), and which is re written as follows by substituting 'A' and 'Z' in to the former formula.

$$Y = A + Z \quad (8)$$

So as to get the balance of trade (net export) we have to deduct "A" from "Y" the formula for the trade balance can be written as follows:

$$Z = Y - A \quad (9)$$

If the national output (Y) greater than domestic absorption (A), in the above equation, the economy's trade balance will be positive and trade surplus will be the case. In the Contrary, if the trade balance is negative, it indicates that the economy is spending beyond its ability to produce and trade deficit will be experienced. (Lencho, 2013).

The absorption approach tells us that if devaluation is needed to achieve improvement in trade balance, the nation's total output production should get improved and at the

mean time it should reduce its total absorption. In other words, the growth rate of absorption must not be greater than the rate of growth of the total national output.

To sum up, the absorption approach goes beyond the elasticity approach by considering the nation's reaction in changing its output production level whenever there is a realization of devaluation in an economy. It also considers the impact of devaluation in changing the spending behavior of domestic economy (absorption) and the effect of domestic spending on the trade balance. Additionally, the absorption approach tells us that after the realization of devaluation, if the nation's supply of output increases and import decreases or if the rate of increase in output level is relatively greater than the rate of increase in the level of domestic absorption, the trade balance will be improved.

1.2.3. Monetary Approach

The monetary approach argues that balance of payment is not a real phenomenon rather it is a monetary phenomenon therefore any disequilibrium in trade balance is caused by disequilibrium in the money market. Similarly, (Johnson, 1976: 251) described the main arguments of monetary approach as follows;

"… the balance of payments is a monetary phenomenon and requires analysis with the tools of monetary theory and not barter or 'real' trade theory; second, that money is a stock, whereas real theory traditionally deals with flows, so that an adequate balance-of-payments theory must integrate stocks and flows; and third, that the money stock can be changed in two alternative ways, through domestic credit creation or destruction and through international reserve flows, the policy choice being important for balance-of-payments analysis".

Unlike the previous two approaches, by focusing on the capital accounts this approach assumes that a change in international currency reserve is related with the disequilibrium of the supply of and demand for money.

As (Lencho, 2013) described, monetary approach took three different assumptions under consideration and these are: There is a stable money demand function in the economy, there is Vertical aggregate supply schedule and purchasing power parity.

As (Lencho, 2013) describes by quoting (Thirlwall, 2004) and (Johnson, 1977**)** that, the monetary approach focus on both current and capital accounts of balance of payment and it assumes that a change in international currency reserve is a function of disequilibrium of the supply of and demand for money in other words its international currency reserve is a function of fluctuation of demand for and supply of the currency. Changes or fluctuations of the level of reserves will lead the equilibrium level of supply and demand for money to be achieved. Based on the argument of the monetary approach, if price increases following depreciation of domestic currency and currency depreciation itself enables the nominal demand for money to increase relatively greater than an increase in supply of money, i.e. hard currency, then depreciation can be considered as a sufficient pre condition to change the current and capital accounts through decreasing the real supply of money in relation to the real demand therefore, payments disequilibrium is basically monetary phenomenon.

On the other hand, (Carboug, 2006), described the short comings of the above mentioned two devaluation approach as follows; whenever there is the adoption of the policy of devaluation in once economy, the price of both domestically produced and imported goods would increase as a result, the nation's demand for money would increase since the needed amount of money for transaction purpose got increased therefore, in order to fill the gap between the demanded and the supplied amount of money, government might issue additional notes or let money to inflow in to the economy from different international money sources. Following the inflow of money, BOP would become positive and the nation's international reserve would improve just for a while. Since devaluation leads the consumers to demand and consume more, the nation's total spending (absorption) would increase and therefore, the surplus would be negatively affected (reduced) or even eliminate as soon as the equilibrium level of the nation's money market is reached. Therefore, the effect of devaluation in a real

economy is temporary and in the long run the only thing the nation would gain by employing devaluation would be inflation and high cost of living

Criticism towards the monetary model

According to (Lencho, 2013), the shortcomings of the assumption of monetary approach are as follows;

The model assumes fixed exchange rates system is employed and changes in the excess supply/demand for money is affecting the level of reserves but in reality since 1972 the world has been using floating exchange rate systems and in this system the balance of payment is expected to adjust itself accordingly, particularly if it is free floating. Therefore, exchange rate is not determined by the balance of payment rather it is determined by the demand and supply of money; so there is no need for reserves. The second reason is that, the assumption of the monetary approach is unreal in the case of changing the volatile condition of the world economy as it has seen empirically in the past few years.

The model assumed as if there is a one to one relation between reserve and money supply but in reality, there is no one- to- one relationship between money supply and reserve movements and a unit Increase in reserve doesn't necessarily followed by a unit increase in the level of the money supply

The model assumes as deficits can only arise if there is disequilibrium in the money market by simply taking the consideration of Walras's Law which is a model of only two assets, i.e. money and goods, it defines excess demand for goods (i.e. a balance of payments deficit) as an excess supply of money.

To sum up, in this approach, exchange rate changes are not capable of bringing changes in balance of payment and following the implementation of devaluation in once economy, money market disequilibrium will be observed and this will creates

some fluctuations in demand and supply of money till the money market adjusts itself to the new equilibrium. Therefore, the monetary approach tells us that devaluation operates strictly by causing disequilibrium in the money market and its effect on the economy will not last forever. It will only proceed till the new equilibrium is going to be achieved so it's temporary. (Asmamaw, 2008)

CHAPTER 2

EMPIRICAL LITERATURE REVIEW ON THE EFFECT OF DEVALUATION ON THE OUTPUT AND THE TRADE BALANCE

In order to take a look at the effects of devaluation on the trade balance, a number of research papers have been conducted and the researchers found quite different results according to the nation's economy under consideration. Here countries are classified into two categories as developed and developing countries so as to see the impact of devaluation on the economy of the developed and developing countries. The United Nation's statistical annex which classified countries in 2012 are used to classify countries as developed and developing countries. countries that have high per capita GNI ($12,275 and more) have treated as developed countries and many other countries that have per capita GNI which is less than $12,275 are treated as developing countries including upper middle income countries like Russia, and Turkey. Even though studies are examined based on the country's per capita income classification, further classifications has made based on the empirical methods that the researchers used.

2.1. THE CASE OF DEVELOPED COUNTRIES

In terms of the methodology, studies can be classified as the studies used the OLS and cointegration techniques. Among the studies which used cointegration technique, (Bahmani-Oskooee and Niroomand, 1998: 135) evaluated whether devaluations has any long-run effect on LDCs domestic output or not for 30 high and upper middle income countries. They employed the unit root test technique in order to know if the variables (GNP, Real effective exchange rate and Nominal effective exchange rate) have the same I(1) and they found that there is unit root on the variables of 17 countries therefore, they checked the co integration between GNP and exchange rate

by using the model below, where GNP stands for gross national product and R for (both real and nominal) exchange rate.

$$GNP = \delta_1 + \delta_2 R + u \quad (10)$$

$$R = \delta_1 + \delta_2 GNP + \varepsilon \quad (11)$$

They come up with the conclusion that there is no long run relationship between the two variables for most of the countries under consideration. Even if they concluded that, in the long run, in almost all targeted countries the Marshal Lerner condition has satisfied and devaluation (depreciation) of the domestic currency improves the nation's trade balance, the production level of most countries hasn't affected by the change in the foreign exchange rate (weather it is real or nominal). Therefore, devaluation has no long-run effect on LDCs domestic production (output).

In a similar manner (Kamin and Klau, 1997) described that, the targeted 27 developed and developing (Latin American, Asian and other industrialized countries of the world) have empirically shared similar kind of trends in the short and long run. Even if the adoption of devaluation results contractionary effect in the short run, it has a positive effect on trade balance and BOP account in the long run for almost all countries under consideration. They used OLS method to estimate the value of the parameters in the model. Their model is presented as follows;

$$\Delta\log(Y) = C + \beta1*\Delta\log(RER) + \beta2*\log(RER)\text{-}1 + \beta3*\Delta\log(Y)\text{-}1 + \beta4*YGAP\text{-}1 \quad (12)$$

Where C: is constant (intercept), Y: real GDP, RER: real exchange rate, YGAP: log of output gap (actual/potential); potential GDP calculated by HP filterΔ: difference operator.

The researchers empirically proved that β4 is negative, β3 is positive, β2 is negative and β1 is positive respectively therefore appreciation (revaluation) of domestic currency enables the real GDP to increase in the short run. Since they got a correlation

between real exchange rate and output growth, devaluation has a positive effect on output growth in the long run.

In contrary with (Bahmani-Oskooee, 1998), (Irandoust, Ekblad, and Parmler, 2005) concluded by using the likelihood based panel co integration method that there is no concrete evidence to say depreciation improves the Swedish trade balance. The model they have used is described as follows;

$$\text{Ln } X_t = \beta_1 + \beta_2 \text{ Ln WY} + \text{Ln } \beta_3 \text{ RER} + U_t \qquad (13)$$

$$\text{Ln } M_t = \alpha_1 + \alpha_2 \text{ Ln DY} + \alpha_3 \text{ Ln RER} + e_t \qquad (14)$$

Where X stands for Swedish real Export and M for Real Imports of Sweden from its bilateral trading nations under consideration. RER represents real bilateral exchange rate between Sweden and its trading countries, WY and DY represents real income of the Swedish trading countries and real Domestic income of Sweden respectively and U and e are error terms. Additionally Ln stands for the natural logarithm of the data.
By employing the above model they found that, though the Swedish export is positively related with the exchange rate for its 6 of 8 main bilateral trading countries (Denmark, France, Germany, the Netherlands, Norway and the US), only for four bilateral countries of Sweden (Finland, France, the Netherlands and the US) does devaluation (depreciation) enables to decrease the volume of import of Sweden. The bilateral trade with the rest two trading countries ((Finland and the UK) would deteriorate following the implementation of depreciation of the Swedish currency. The Marshal Learner condition has full filled only in two of the bilateral trading countries of Sweden such as France and the Netherlands but it is not full filled for the rest of its trading countries therefore, it is hard to conclude depreciation as a means of achieving improvement in trade balance.

Among the studies that use OLS method, (Le Khak, 2006) has tested the panel data of US and its five highest bilateral trading countries from Europe and empirically proved

that, depreciation of Dollar has no contribution to decrease the trade deficit of USA against its bilateral trading countries of Europe. The regression model that he has used is described below;

$$TB_t = \beta_1 + \beta_2 R + U_t \qquad (15)$$

Where TB and R are stands for the trade balance and exchange rate of United States with its five biggest European bilateral trading countries respectively (Germany, France, Italy, Ireland and the Netherlands).

According to (Le Khalk, 2006) Dollar depreciation has a negligible effect on America's trade deficit but devaluating Dollar might bring more disadvantages for US economy than its benefits because when US devaluates its currency, the value of Dollar gets decrease and different countries and people who holds Dollar lose their confidence on it and they prefer to use some other alternative currencies than $US and this is going to affect the US economy more. Further devaluation of US dollar will create further problems in world economy and Dollar as a currency would be less attractive. Therefore devaluation is not the best tool to alleviate the problem of the US trade deficit as long as it is responsible for other monetary inconveniences. (Le Khak, 2006:39-41)

In contrary, (Hooper, Johnson and Marquez, 2000) have used a very similar type of model with (Irandoust, Ekblad, and Parmler, 2005) and come up with a different conclusion in fact; the target groups that they have addressed are two quite different nations. They have used the model below and suggested that, real depreciation of dollar has to be taken as a measure so as to reduce the ongoing external trade deficit from getting wider.

$$\text{Ln } X_t = \beta_1 + \beta_2 \text{ Ln WY} + \text{Ln } \beta_3 \text{ RER} + U_t \qquad (16)$$

$$\text{Ln } M_t = \alpha_1 + \alpha_2 \text{ Ln DY} + \alpha_3 \text{ Ln RER} + e_t \qquad (17)$$

Where X stands for Export and M for Imports from their bilateral trading nations under consideration. RER represents relative bilateral exchange rate (Relative export/import price), WY and DY represents real income of their trading countries (foreign economic activity) and real Domestic income of the G7 countries respectively and U and e are error terms. Additionally Ln stands for the natural logarithm of the data.

On the other hand, (Berthou, 2008) conducted a research on 20 OECD countries and their bilateral trade relation with 52 developed and developing countries shows that, a 10 % appreciation of domestic currency results a 6.8 % average reduction of export levels. The model took RER (real effective exchange rate) as an independent and real export of OECD and non- OECD countries as a dependent variable and come up with the conclusion that real exchange rate appreciation has an adverse effect on OECD nation's trade balance.

2.2. THE CASE OF DEVELOPING COUNTRIES

(Petrović and Gligorić, 2010), by employing the model below they concluded that real depreciation of domestic currency improves the trade balance of Serbia in the long run even though J curve effect has observed and trade balance deteriorates in the short run.

$$TB = \alpha_1 + \alpha_2 \text{ Ln } GDP_d + \alpha_3 \text{ Ln } REER + e_t \qquad (18)$$

Where TB is the nation's trade balance, and GDP and REER stands for the Serbian's gross domestic product and real effective exchange rate respectively.

Similarly, (Algieri, 2004) indicates that, even if petroleum is not incorporated in the calculation; the Russia trade balance gets improvement whenever there is a real depreciation of domestic currency. In order to empirically test the effect of exchange rate devaluation on the Russians trade balance the researcher used the following model;

$$\text{Log } X_t = \beta_1 + \beta_2 \text{ Log } P_t + \beta_3 \text{Log } Y_t + \beta_4 \text{ Log } W_t + U_t \qquad (19)$$

Where X is export, P is the relative price (p/p*), Y is the aggregate income and W is the OECD's total industrial outputs.

The model that the researcher used has taken the price and income elasticity of trade of Russia in to consideration and he got significant results of both of the parameters. As relative price increased by 1 percent (when domestic currency depreciates), export increased by 2.039%.

On the other hand, Wilson (2001) used the following models and checked the relationship between exchange rate and trade balance both in the short and long run.

$$\Delta Bt = \beta_0 + \sum_{j=1}^{3} \beta 1\, \Delta Bt - j + \sum_{i=1}^{7} \beta 2\, \Delta\, qt - i + \sum_{j=0}^{3} \beta 3 \Delta Yt - j + \sum_{j=0}^{3} \beta 4 \Delta\, Y * t - j + et \qquad (20)$$

$$\Delta Bt = \beta_0 + \sum_{j=1}^{3} \beta 1\, \Delta Bt - j + \sum_{i=1}^{7} \beta 2\, \Delta\, qt - i + \sum_{j=0}^{3} \beta 3 \Delta Yt - j + \sum_{j=0}^{3} \beta 4 \Delta\, Y * t - j + et \qquad (21)$$

Where B stands for real trade balance, Δ for first difference, q for real exchange rate, Y for real domestic national income, Y* for real foreign national income, $t\text{-}_i$, and $t\text{-}_j$ for the lag variables (The researcher used different lags for different variables as described in the model above), and e for the error terms.

As (Wilson, 2001) describes, the change in real exchange rate (devaluation or depreciation) doesn't have a significant impact on the real trade balance of Asian countries such as Singapore, and Malaysia when their bilateral trade relation with USA and Japan is concerned but the Korean trade balance shows some sort of J curve effect following the real depreciation of the nation's currency with respect to its bilateral trade with USA and Japan.

According to (Kemal and Qadri, 2005), cointegration techniques are the better means of checking the relation between exchange rate and import and export. The researchers used the cointegration techniques so as to check if there is any positive or negative relation between the foreign currency exchange market and import and export and the models that the researchers have used are described as follows;

$$\Delta R_t = a_1 (\delta_1 Rt\text{-}_1 + \delta_2 mt\text{-}_1 + \delta_3 xt_{-1}) + \beta_{11}\Delta Rt\text{-}_1 + \beta_{12}\Delta mt\text{-}_1 + \beta_{13}\Delta xt_{-1} \quad (22)$$

$$\Delta m_t = a_3 (\delta_1 Rt\text{-}_1 + \delta_2 mt\text{-}_1 + \delta_3 xt_{-1}) + \beta_{31}\Delta Rt\text{-}_1 + \beta_{32}\Delta mt\text{-}_1 + \beta_{33}\Delta xt_{-1} \quad (23)$$

$$\Delta x_t = a_2 (\delta_1 Rt\text{-}_1 + \delta_2 mt\text{-}_1 + \delta_3 xt_{-1}) + \beta_{21}\Delta Rt\text{-}1 + \beta_{22}\Delta mt\text{-}1 + \beta_{23}\Delta mt_{-1} \quad (24)$$

Where x is export, m is import, R is real effective exchange rate, Δ is stands for the first difference of the variables (the derivative of different variables), ($Rt\text{-}_1$, $mt\text{-}_{1,}$ $xt_{-1)}$ are the lag variables for real exchange rate, import and export respectively), $a_{t,}$ and $\delta_{t,}$ are adjustment variables and β_{ij} shows the coefficient of VAR (Vector auto regression)

.

$$\Delta Yt = \mu Yt\text{-}1 + \beta\Delta Yt\text{-}1 + et \quad (25)$$

μ is the long run cointegrating matrix and it contains equilibrium (error) correction terms and β shows the coefficient of VAR.

By employing the above mentioned models the researchers got a positive relationship between trade balance and exchange rate devaluation therefore**,** whenever there is exchange rate devaluation (depreciation), the Pakistan's trade balance could get an improvement since the change in real exchange rate simultaneously affects the volume of imports and exports in a negative and positive way respectively. In fact, imports are relatively more sensitive for real exchange rate changes than exports.

In a similar manner, devaluation also has a positive effect on the Chinese economy both in the short and long run and there is no such a thing called J Curve effect in Chinese economy. Whenever there is devaluation of the Chinese currency, the import demand of China get decrease while the import demand of the G7 China's bilateral

trading partners get improved therefore, devaluation come up with improvement of the Chinese trade balance and BOP account as well. (Ahmad and Yang, 2004). The researchers made an empirical analysis on the effect of exchange rate devaluation in advancing the Chinese trade balance by using the model described below.

$$\Delta Bt = C + \alpha 1\ \Delta qt + \alpha 3\ \Delta\ Yt + \alpha 4\ \Delta Yt^* + \varepsilon t \qquad (26)$$

Where Δ defines the first difference, Bt defines the balance of payment, c defines the constant (autonomous) value, qt defines the exchange rate, Yt defines the domestic national income, Yt* defines the foreign national income (the income of G7 countries) and εt defines the error term.

The researchers checked the existence of unit root by using Augmented Dickey-Fuller (ADF) test in order to check if the data have the problem of spurious regression moreover, they also checked the co integration of the variables (both dependent and independent variables) under consideration and proved that there is no significant co integration between real exchange rate, trade balance and real national income both in the short and long run. In fact, the adoption of devaluation has little positive impact in improving the trade balance both in the short and long run and the researchers claimed as they didn't observe any J curve effect in the short run.

Unlike the previous one, J curve effect has observed in three countries of East Asia according to (Onafowora, 2003). The countries are namely Indonesia Malaysia and Thailand. These countries have experiences J curve effect in their bilateral trade with USA and Japan therefore, in the long run, the trade balance of these three countries with their bilateral trading countries (USA and Japan) get better following the adoption of devaluation of the domestic currency even though they face trade deterioration immediately.

The researchers used a similar kind of model as many of the researchers used and which is described below;

$$Ln\ (X/M)t = \beta_1 + \beta_2\ Ln\ Yt + \beta_3 Ln\ Yt^* + \beta_4 LnRER + \beta_5\ D_{97+}\ u \qquad (27)$$

Where Ln is the natural logarithm, X/M is the value of export over import (terms of trade), Y is the real domestic income, Yt* is the real foreign income, RER is the real exchange rate, D_{97} is the dummy time variable that takes the value of zero for the years before 1997 and one otherwise, and u is the error term.

The researchers employed cointegration techniques and concluded that, there is a long run relationship among real trade balance, real exchange rate, real domestic income, and real foreign income. All of the above mentioned three countries (Indonesia Malaysia, and Thailand) experienced the J curve effect in their trade balance when they made trade with USA which means, whenever they depreciate their currency against the American Dollar, their trade balance got deteriorated for a short while and improve after some specific time period. The same is true for the trade balance of Indonesia and Malaysia while they make a bilateral trade with Japan and depreciate their domestic currency against Yen but Thailand has a bit different experience in its trade with Japan so that, unlike Indonesia and Malaysia, devaluation of the Thailand currency results “ S “ curve.

Additionally, (Bahmani-Oskooee, 1998) has checked the Marshal Learner condition for 23 LDCs by using the model described below;

$$LogMt = a_1 + \beta_1\ Log\ (PM/PD)t + \beta_2 LogYt + e \qquad (28)$$

$$LogXt = c_1 + \alpha_1\ Log\ (PX/PXW)t + \alpha_2\ Log\ YWt + u \qquad (29)$$

Where M is import, X is export, PM/PD is the ratio of import and domestic prices, Y is the domestic national income, YW is the world income, PX is export price, PXW is the world export price, e and u are the error terms.

(Bahmani-Oskooee, 1998) concludes that in almost all 23 LDCs (including Ethiopia), devaluation has an expansionary effect in the short run nevertheless; there is no significant positive relation (co integration) between devaluation and output production in most of Least Developed countries (17) in the long run.

Similarly, Depreciation of Albania's currency has also a positive impact on the countries trade balance in the long run (Pllaha, 2013).
The researcher used quite similar type of model as many of the researchers and the model has shown below;

$$logTBij,t = a_0 + a_1 \, logYi,t + a_2 \, logYj,t + a_3 \, logREER + ut \qquad (30)$$

Where TB stands for the ratio of the trade balance of Albania (import / export), Yi for the income of Albania's bilateral trading countries, Yj for the domestic income of the nation, REER for real effective exchange rate and u for the error term.

As the researcher described, the trades which is taken place with most of Albania's major bilateral trading partners get improved following the realization of the depreciation of domestic currency but J curve effect would be observed when Albania makes the bilateral trade with Italy and Turkey. (Pllaha, 2013:15-16).

Unlike the previous studies, devaluation has a deteriorating effect on the Chilean's trade balance both in the short and medium run due to the inelastic nature of the Chile's import for semi processed inputs and intermediate raw materials, and the reluctant response of manufacturing and agricultural sectors for exchange rate changes in the short run. The Marshal Lerner condition doesn't full filled in this economy in the short and medium run so that, the contractionary effect of devaluation could last two and half years later. (Solimano, 1985). Moreover, (Calvo, Reinhart, and Vegh, 1994) has also empirically proved in their study that, in Brazil, Chile, and Colombia, the realization of undervalued (highly depreciated) real exchange rate is significantly associated with inflation.

According to (Aydın, Çıplak, and Yücel, 2004), the explanatory variables of Export and Imports are described as follows;

$$\text{Log XQ} = \beta_1 + \beta_2 \text{ Log Y} + \beta_3 \text{Log ULC} + \beta_4 \text{ Log Px} + \beta_5 \text{ DT2011} + \beta_6 \text{ D1} + \beta_7 \text{ D2} + \beta_8 \text{ D3} + U_t \quad (31)$$

$$\text{Log MQ} = \beta_1 + \beta_2 \text{ Log Y} + \beta_3 \text{Log RER} + \beta_4 \text{ DU2011} + \beta_5 \text{ DT} + \beta_6 \text{ D1} + \beta_7 \text{ D2} + \beta_8 \text{ D3} + U_t \quad (32)$$

Where Log XQ and Log MQ stands for the logarithmic value of Export and import respectively, Log Y for Real domestic output, Log Px for Export prices, Log ULC for the unit labor cost, Log RER for the logarithm value of real exchange rate and DT2011 and DU2011 stands for the dummy time variable of each of the four quarters of the export and import models respectively (which takes the value of zero for the years before 2001 and it becomes 1 following the first quarter of the year 2001).

(Aydın ,Çıplak, and Yücel, 2004) used unrestricted vector auto regression model and concluded that, Import is determined by real exchange rate and national income while export on the other hand is determined by unit labor cost, export prices and national income therefore, depreciating (devaluating) the domestic currency will lead the volume of imports of Turkey to shrink where export is almost unchanged (constant) and it results an improvement in the level of the Turkey's balance of trade and BOP as well.

On the other hand, (Dincer and Kandil, 2009) used the model below and described the effect of the appreciation of the Turkish Lira on the trade balance.

$$\text{DX} = \beta_1 + \beta_2 \text{ DY} + \beta_3 \text{D MS} + \beta_4 \text{ D G} + \beta_5 \text{ DMDf} + \beta_6 \text{ E}_{-1} \text{ UnexS} + \beta_7 \text{ Unex appr} + \beta_8 \text{ Unex depre} + U_t \quad (33)$$

Where; D is the derivative value, X is export, Y is the domestic aggregate income (GDP), MS is the domestic money supply, G is the government expenditure, MDf is the import demand of foreign countries (Turkish bilateral trading countries) for Turkey, UnexS is unexpected exchange rate shocks, E_{-1} is a lag variable for real exchange rate , Unex appr is the unexpected appreciation of the domestic currency, Unex depre is the unanticipated depreciation of domestic currency, and U is the error term.

According to the researchers, the appreciation (revaluation) of exchange rate could have a negative effect on the Turkey's trade balance irrespective of whether the type of appreciation is anticipated or unanticipated type of variation in exchange rate but the adverse effect of anticipated exchange rate revaluation (appreciation) would be more than that of the unanticipated one. Though depreciation (devaluation) of Lira associates with an increase in the level of the nation's export to some extent, whenever there is less variability of exchange rate, there would be more improvement in the export volumes of different sectors of the Turkish economy and therefore, Trade balance would be better-off .

(Halicioglu 2007) used ARDL (Autoregressive distributed lag) modeling approach in his research analysis and employed the following model so as to take a look at the relation between the Turkey's trade balances with exchange rate variability.

$$\text{Ln TB} = \beta_1 + \beta_2 \text{Ln Y} + \beta_3 \text{Ln Y*} + \beta_4 \text{LnRER} + u \qquad (34)$$

Where TB is the trade balance which is expressed as a ratio of Turkey's Imports over its exports, Ln is the natural logarithmic values of the variables under consideration, Y is the real income of Turkey, Y* is the real income of the bilateral trading countries of Turkey, RER is the real effective exchange rate and u is the error term.

As the researcher described, real depreciation of Turkish Lira results an improvement on the nation's trade balance specifically, the Turkish bilateral trade which is taken

place with UK and USA has holds the Marshal Lerner condition and got improvement following the depreciation of the Turkish currency in the long run where there is no any J Curve effect (an immediate trade deterioration) in the short run.

Similarly, (Kandil, Berument, and Dincer, 2007) have used a model which is quite similar with their previous model (Dincer and Kandil, 2009) only with one additional variable in their recent model. They have incorporated a variable which represent the difference in the amount of the unexpected and expected exchange rates. The new model that the researchers have used is described below;

$$DX = \beta_1 + \beta_2 DY + \beta_3 D\,MS + \beta_4 D\,G + \beta_5 DMDf + \beta_6 E_{-1}\,UnexS + \beta_7 Unex\ appr + \beta_8 Unex\ depre\ \beta_9 (UnexS - E_{-1}\,UnexS) + U_{t.} \quad (35)$$

where all the variables are defined in the same way as they were defined earlier and (UnexS - E_{-1} UnexS) defined as an exchange rate which remains after the deduction of expected exchange rate amount (real exchange rate multiplied with unexpected exchange rate and the adjusting parameter) from the unexpected one (exchange rate shock).

As the researchers described, unanticipated depreciation of Turkish Lira can improve the Turkish export even if it has some adverse effects on the real consumption and investment level of the nation. Whenever there is unanticipated depreciation of domestic currency, the relative price of an output at domestic market, become relatively cheaper and this discourages producers and investors from producing more outputs. On the other hand, the anticipated appreciation of domestic currency (Lira) shrinks the nation's output level and end up with creating inflationary problems in the country. Most importantly, a frequent fluctuation of exchange rate would hinder the nation's economic growth.

African countries are not exceptional in applying devaluation in their economy so as reach at a better level of trade balance. In order to take a look at the effect of

devaluation on the Nigerian national output and trade balance (Akpan and Atan, 2011) used three different equations (output, exchange rate and inflation equations) as described below;

$$Ln\ Yt = \delta_1 + \delta_2\ Ln\ MSt + \delta_3\ Ln\ Rt + \delta_4\ Ln\ Rt_{-1} + \delta_5\ Ln\ Inft + \delta_6\ Ln\ Yt_{-1} + u \quad (36)$$

$$ln\ Rt = C + \beta_1\ lnYt + \beta_2\ ln\ Inft + \beta_3\ ln\ Rt\text{-}1 + \beta_4\ ln\ MS + \varepsilon \quad (37)$$

$$Ln\ Inft = \mu_0 + \mu_1 ln\ MSt + \mu_2 ln\ Yt + \mu_3 lnInft\text{-}1 + \mu_4\ Rt + e \quad (38)$$

Where ln is the natural logarithm, Y is real output (real GDP) of Nigeria, MS is the money supply, R is the nominal exchange rate, Inf is the inflation rate, $yt\text{-}_1$ and $Rt_{-1}$are the lag of real output and exchange rate respectively, and u is the error term

According to them, for Nigerian economy exchange rate and economic growth (Yt_{-1}) are positively related. The adoption of devaluation (depreciation) in an economy will bring economic growth to some extent but since there is no such a strong positive relationship between exchange rate (R) and nation's output (Y), playing with the rate of exchange of foreign currency seems not that promising for Nigeria's economy rather some other monetary policies could be effective tools of achieving economic growth. (Akpan and Atan, 2011)

Likewise, (Sanya, 2013) has also empirically tested the effect of exchange rate devaluation on the Nigerian economy (GDP) by using the model described below.

$$lnGDP = \beta_1 + \beta_2 lnEX + \beta_3\ lnINF + \beta_4\ lnFER + \beta_5\ lnINTR + \beta_6\ lnMS + \beta_7\ ln\ BOP + \beta_8\ lnPM + \beta_9\ GDP(-1) + U \quad (39)$$

where GDP defines Gross Domestic Product , EX defines Exchange Rate, INF defines Inflation Rate, FER defines Foreign Exchange Reserve, INTR defines Interest Rate MS defines Money Supply, BOP defines Balance of Payment, PM defines Propensity to import and u defines the error term.

As the researcher empirically proved, the sustainable depreciation of the real exchange rate of the Nigerian currency (Naira) brings more profitability of investments and promotes economic growth. Nevertheless, the effectiveness of devaluation in Nigeria's economy is not free from a precondition, as long as devaluation needs as a tool of achieving economic growth, saving should be relatively higher than investment and expenditure has to be lesser than income since depreciation needs more saving.

In a Similar manner, (Klau, 1998) also tested the effectiveness of the policy of devaluation in bringing a change in the level of actual output for CFA franc countries of sub Saharan Africa by using two equations (the inflation and production equations) and panel regression model. The equation described as follows;

$$\Delta \log Y_t = \gamma + \alpha_1 \Delta \log RERt + \alpha_2 \log RERt\text{-}_1 + \alpha_3 \Delta \log Yt\text{-}_1 + \alpha 4 (\log Y - \log \hat{Y})t\text{-}_1 + u \quad (40)$$

Where Δ is a symbol used to indicate changes in the value of the variables throughout some specific time periods, log is the logarithm values of different variables, Y is the nation's actual real output, $\hat{Y}$ is the potential output; RER is real effective exchange rate,$Y - \hat{Y}$ is the output gap, and $(\log Y - \log \hat{Y})t\text{-}_1$, $RERt\text{-}_1$ $Yt\text{-}_1$ are the lag of the output gap, real effective exchange rate and actual output respectively.

$$\Delta \log P_t = -\alpha\lambda\theta + \lambda \log RERt\text{-}_1 + \alpha\varepsilon\lambda (\log Y - \log Y)t\text{-}_1 + (1 - \alpha) \Delta \log P^*t + (1 - \alpha) \Delta \log E_t + \beta\Delta \log Pt\text{-}_1 + e \quad (41)$$

Where

$\Delta \log P_t = \alpha\Delta \log Pd + (1- \alpha)\Delta \log Pf$ (the addition of (α)(change in the logarithm value of domestic price) and (1- α) (change in the logarithm value of foreign price. (Real Inflation)

$-\alpha\lambda\theta$ = constant (autonomous value)

$\log RERt\text{-}_1$= lag of real effective exchange rate,

$(\log Y - \log Y)t\text{-}_1$ =lag of output gap

Δ log P*t = change in the logarithm value of the foreign price at time t

Δ log E_t = change in the logarithm value of the nominal exchange rate

Δ log $Pt\text{-}_1$ = lag of real inflation.

U and e = the error terms

By employing the above mentioned two equations, the researcher described that, though there is a positive relationship between devaluation and the trade balance (trade competitiveness), the empirical study shows that devaluation has also inflationary effect in the economy and there is a trade-off between domestic inflation and external competitiveness in CFA franc countries of sub Saharan Africa countries. Which means when these countries want to increase their competitiveness in the world market through implementing devaluation of their own currency, they face inflationary problems in domestic economy and the vice versa. Likewise, under valuation (depreciation) of the real exchange rate has also associated with inflation in Brazil, Chile, and Colombia's economy as (Reinhart, Calvo and Vegh, 1994) described on their research.

2.3. THE CASE OF ETHIOPIA

(Lencho, 2013) used the model below in order to explain the interrelationship between the dependent (TB) and independent variables (REERI, RGDP, MS, TOT, RWGDP, RGE, DDRT and DPC). Where TB defines the Ethiopian trade balance, REERI defines real effective exchange rate, RGDP defines the real Ethiopian gross domestic product, MS defines the domestic Money supply, TOT defines the nation's terms of trade, RWGDP defines the real world GDP, RGE defines real government expenditure of Ethiopia, DDRT is dummy for drought (shortage of rain fall) and DPC is also dummy for policy changes.

$$(Ln(TB)= \beta_1 + \beta_2 Ln(REERI)+ \beta_3 Ln(RGDP)+ \beta_4 Ln(MS)+ \beta_5 Ln(TOT)+ \beta_6 Ln(RWGDP) + \beta_7 Ln(RGE) + \beta_8 (DDRT) + \beta_9 (DPC) + Ui \quad (42)$$

As (Lencho, 2013) empirically shown, the adoption of devaluation of the domestic currency will increase the nation's trade deficit in the long run due to the price inelastic nature of imports and agricultural based, very sensitive for external shocks and highly price elastic nature of exports. Therefore, whenever the nation depreciates its currency, the trade balance gets more deteriorate.

In contrary, (Mehare, and Edriss, 2012: 46) used ARDL (auto regressive distributed lag model and described that devaluation has positive effect on the amount of export but it doesn't change the trade balance. The original and the ARDL models are described as follows;

$$\text{Ln Xt} = \beta_1 + \beta_2 \text{ Ln REER} + \beta_3 \text{ Ln GDP} + \beta_4 \text{ Ln TOT} + \beta_5 \text{ Ln EV} + u \qquad (43)$$

Where X is the Ethiopian export supply of the oil seeds, REER is real effective exchange rate, GDP is the national income, TOT is the terms of trade, EV is exchange rate variability and u is an error term.

$$\Delta\text{Ln Xt} = \beta_0 + \sum_{j=1}^{k} \beta 1\, \Delta\text{Ln Xt} - \text{j} + \sum_{j=1}^{m} \beta 2\, \Delta\text{Ln REERt} - \text{j} + \sum_{j=1}^{n} \beta 3 \Delta\text{Ln GDPt} - \text{j} + \sum_{j=1}^{s} \beta 4 \Delta\text{Ln TOTt} - \text{j} + \sum_{i=1}^{t} \beta 5 \Delta\text{Ln EVt} - \text{j} + \beta_6 \text{ Ln Xt}_{\text{j-1}} + \beta_7 \text{ Ln REERt}_{\text{-1}} + \beta_8 \text{ Ln GDPt}_{\text{-1}} + \beta_9 \text{ Ln TOTt}_{\text{-1}} + \beta_{10} \text{ Ln EV}_{\text{tj-1}} + u \qquad (44)$$

"Where: k,m,n, and s indicate optimum lag length of the variable under investigation.
ΔlnXt-j: differenced and lagged logarithmic value of export of oilseeds measured in USD; ΔlnREERt-j: differenced and lagged logarithmic index of real effective exchange rate of the country using base year 1995=100;
ΔlnGDPt-j: differenced and lagged logarithmic value gross domestic product of the country measured in USD
ΔlnTOTt-j: differenced and lagged logarithmic value of terms of trade of the country measured in percentage (calculated using equation 3 above);
ΔlnEVt-j: differenced and lagged logarithmic value of exchange rate variability (calculated using equation 4 above);

ΔlnXt-1, ΔlnREERt-1, ΔlnGDPt-1, ΔlnGDPt-1, ΔlnTOTt-1 and ΔlnEVt-1 are logarithmic first lag values of the same variables explained above; β0, β1, β2, β3 and β4 are short run coefficients to be estimated, and , β_6, β_7, β_8, β_9, and β_{10} are long run coefficients to be estimated".

By employing the above mentioned models, the researchers conclude that, exchange rate variability and exports of agricultural outputs like oil seed production are negatively related and even if the government let the domestic currency to depreciate further, the contribution of oilseed crop to the economy wouldn't be increase beyond some specific level due to the existence of sub-standard quality of the product which resulted from inappropriate handling and in-facilitated transportation system. As long as there is no adequate transporting mechanism for exportable goods, it's impossible to sell agricultural outputs when they are fresh and this has a significant adverse effect on the demand and price of the product. Generally, since Ethiopia's economy is highly dependent on agricultural products, the trade balance wouldn't improve following the currency depreciation where there is inadequate handling and transporting problems of exportable goods. Similarly, (Asmamaw, 2008) shown that devaluation doesn't have a capacity to improve the nation's trade balance. The researcher used the import and export demand models that are mentioned below and empirically tested the significance of devaluation in changing the import and export trends of Ethiopia.

$$LX= \beta_1+ \beta_2L(PX/PXW) + \beta_3L(PX/PXW)\_1 + \beta_4LYW6 + \beta_5LP + \beta_6D\_ER + \beta_{7\alpha}D\_D + U \quad (45)$$

$$LM= \alpha_1+ \alpha_2L(PM/PD) + \alpha_3LY + \alpha_4LP + \alpha_5D\_ER + \alpha_6D\_D+ \varepsilon \quad (46)$$

Where L is the Log, X and M are the quantity of Ethiopian exports and imports respectively, PX and PM are the price of Ethiopian export and imports respectively, PXW is the average world price of export (the average export price of Ethiopian trading countries), PD is the domestic price level, PX/PXW is a relative price, (PX/PXW)_1 is the lag of the relative export price, YW is the world real income, Y is the Ethiopian GDP, P is the premium in the official and parallel (black market's)

exchange rate, D_ER is the dummy variable for Eritrea, D_D is a dummy variable for the devaluation period, and U and ε are error terms.

The researcher found that even if devaluation enables the Ethiopian export to get improvement to some extent, Since Ethiopia is importing very crucial commodities like manufacturing machineries, vehicles, petroleum and so on (in a random sequential order), and exports agricultural outputs where both the import demand of Ethiopia and that of other countries (Ethiopian bilateral trading countries) for Ethiopian commodities are inelastic, the nation's trade balance doesn't change following the implementation of devaluation.

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. The model that the researcher has used is described below;

$$LRGDP = \beta_1 + \beta_2 L(REER) + \beta_3 L(MS) + \beta_4 L(GE) + u \qquad (47)$$

Where LRGDP defines the logarithm value of real gross domestic product (national output), L(REER) defines the logarithm value of real effective exchange rate, L(MS) defines the logarithm value of money supply and L(GE) defines the logarithm value of government expenditure. The empirical result proved that the monetary policy is successful enough and plays a positive and significant role in increasing the nation's output level but the fiscal policy is not. Government expenditure has the unexpected negative sign and which tells us, whenever the government expenditure increases in the economy, the nation's output level decreases.

As (Lencho, 2010) described in his empirical research analysis, Ethiopian export can be highly determined by foreign direct investment, domestic GDP, real effective exchange rate and dummy variable for policy changes and this can be statistically described as follows;

$$LnExt = \beta1 + \beta2\ LnFDI + \beta3\ LnGDP + \beta4\ LnREERI + \beta5\ DD + \varepsilon \quad (48)$$

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.

Unlike the previous studies, (Genye, 2011) found a controversial relation between Ethiopian currency devaluation and GDP per capita by employing the model below.

$$GDPpc = \alpha + \beta1Edu + \beta2\ PI + \beta3\ PAB15 + \beta4\ OP + \beta5\ PE + \beta6\ ER + \beta7\ DF + \beta8\ W + \varepsilon t \quad (49)$$

Where Edu stands for education, ER for exchange rate, PI for private investment, DF for drought (shortage of rain fall) and famine, PAB15 for Demographic factor, W for war in the country, OP for openness of the economy, PE for public Expenditure and ε for error term. By using above mentioned regression model which has no time lag, the researcher found a negative but insignificant relationship between the devaluation and GDP per capita however, the researcher added some exchange rate lags in to the original model in order to take a look at the effect of devaluation on the nation's GDP for different time periods and the new model described as follows;

$$GDPpc = \alpha + \beta1Edu + \beta2\ PI + \beta3\ PAB15 + \beta4OP + \beta5PE + \beta6ER + \beta7\ ERt\text{-}1 + \beta8\ DF + \beta9\ W + \varepsilon \quad (50)$$

When the researcher incorporate a time lag on the model, she found a significant negative effect of exchange rate devaluation on GDP per capita on the base year and a significant positive relation between the two variables on the next year.

To sum up, based on the studies we have examined earlier, it is hard to conclude as the developed countries get benefited from depreciating their currency in terms of another currency at the mean while, we can't say that all developing countries face improvement in their trade balance whenever they devaluate their currency. Irrespective of the development level of the nation under consideration, devaluation of domestic currency may have a significant positive impact in improving the nation's trade balance or the vice versa. What matters a lot is the product that the nations are producing for export purposes, the type of goods they are importing and countries that they are making bilateral trade with.

In fact, many studies conducted on the developed countries shows that depreciation of the domestic currency has a significant positive relation with their trade balance in the long run even if there might be some sort of J curve effect in the short run, but the case of USA is quite the opposite due to the fact that Dollar is an international medium of exchange and as the value of dollar depreciates, people may lose their confidence on it and would prefer to use some other alternative internationally accepted currencies therefore, depreciation of dollar might be the cause of deterioration of the USA's economy rather than improving the trade balance.

Similarly, studies have also shown that LDCs would also be beneficiary from depreciating the value of their own domestic currency in terms of another currency. The only nation which faced deterioration of the trade balance after the implementation of devaluation (depreciation) of its own currency is Chile but the rest (Serbia, Russia, Pakistan, China, Turkey, Malaysia, Indonesia, Thailand, Albania, Nigeria, and other countries have enjoyed the improvement of their trade balance. In fact, there is an inflationary problem which happened simultaneously with the

improvement in the level of trade balance in many of sub Saharan African countries and some of the Latin American countries such as (Brazil, Chile, and Colombia).

In contrary many researchers got a negative relation between devaluation and trade balance in Ethiopian economy. As we all know since the nation's export is highly dependent on the agrarian economy and import on the sophisticated industrial outputs, petroleum and so on, even if the nation adopt devaluation as a monetary policy, the trade balance doesn't get better. Furthermore, the nation's trade balance may even deteriorate whenever the domestic currency loses its purchasing power especially when the domestic industry uses petroleum and semi processed imported goods as an input.

CHAPTER 3

COUNTRY OVERVIEW: EXCHANGE RATE REGIME, TRADE BALANCE, MONETARY AND FISCAL POLICY

Ethiopia is a nation which is located in the eastern part of Africa (horn of Africa) at 8 00 N (northern), and 38 00 E (eastern) hemisphere. The nation consists of a total of 1,104,300 sq km where some part of the land escape (104,300 sq km) is covered by water. The nation has 6 neighboring countries which shares border with. It shares boundaries with Eritrea from the north, Somalia and Djibouti from the east, Sudan and South Sudan from the west and Kenya from the south.

Land is the property of the government in which it is in charge of selling or renting for both domestic tenants and foreign investors. The nation's economic growth rate is the highest in the region though the nation is still one of the poorest nations in the world. Despite the poor economic performance, the nation has a huge potential of natural resources (like gold, platinum, potash, copper, natural gas and so on), young and cheap labor forces, conducive climatic condition for production, sufficient water resources, fertile arable land and so forth. CIA The World Factbook.

The Ethiopian economy is highly dependent on agricultural production and the main crop which the nation exports the most is coffee but as time goes, the government becomes more interested in diversifying the outputs by emphasizing on manufacturing, textile and energy generation sectors as a result, the economy becomes more open for the foreign investors in contrary, the financial sector such as the banking, insurance, and micro-credit institutions, and telecommunication are restricted to domestic investors.

3.1. FOREIGN EXCHANGE REGIME IN ETHIOPIA

After the Bretton Woods agreement the Ethiopian Dollar proclaimed to be changed to the value of 0.355745 grams of fine gold and it could be changed for other currencies according to its value in terms of gold. Based on the gold price of the currency of USA and Ethiopia, 1 USD was exchanged for 2.48 Ethiopian Dollars for almost two decades. The Ethiopian dollar got a small change in its value of exchange and devaluated to the American dollar in 1964. Later on, after Bretton Woods system, the nation's currency regained its value more than before and 1USD was changed to 2.3 Ethiopian birr in 1971. Two years later, the Ethiopian birr got further revaluation and exchanged for 2.07 per 1 USD due to the depreciation of the US dollar in terms of another currencies. When Ethiopia started using a pegged type exchange rate system during the Derg regime, which was the government of Ethiopia that came in to power immediately after the down fall of the Feudalist system (Haile Selassie regime) and lead the nation from 1974-1991, the late exchange rate (2.07 birr /1 USD) became the peg exchange rate amount for almost two decades and last long in 1992 while the rest of the world including USA were changing (moderating) the value of their currencies in terms of another currency according to the world market and world economy. This leads the Ethiopian Birr to be overvalued for two decades and let the nation lose the competition over the world market for Ethiopia made exported goods. (Lencho, 2010).

When the Ethiopian People's Revolutionary Democratic Front (EPRDF) became the government of Ethiopia, it was already realized that pegging the exchange rate has had adverse effects on the economy and the domestic currency need to be devaluated. As a result, the national bank of Ethiopia devaluated the currency very highly since 1992. (Lencho, 2010). The researcher described the developments that taken place by the national bank of Ethiopia in adopting the different ways of exchange rate regimes following the year 1992, as follows;

When the current government of Ethiopia came to power, it was already realized that the nation's currency had over valued for several years and significant devaluation was needed to sort out the adverse effect of the overvalued currency on the economy. As a result, the central bank made a massive devaluation over the domestic currency in 1992 and it started auction market for foreign financial exchange in May 1 1993. Starting from August 1996, auction market starts to operate in a weekly basis due to an increment of the domestic demand for foreign currencies, and by offering some specific amount of foreign currency for the bidders to bid over it, the central bank used to fulfill the people demand for hard currency. In the same year (1996), the commercial banks got a permission to open their foreign exchange bureaus and this brought the introduction of inter-bank foreign exchange market and worked alongside the auction system since 1998. These days, the nation's official exchange rate is determined by inter-bank foreign exchange market in a daily basis. (Lencho, 2010: 8).

3.2. MONETARY AND FISCAL POLICY IN DIFFERENT REGIMES OF ETHIOPIA

Despite the fact that, it's very hard and almost impossible to get books or any other studies on the macroeconomic policy of Ethiopia during different regimes, the researcher tried to describe the macroeconomic policies which was (are) in use in different political regimes of Ethiopia. The researcher classified the regimes in to three categories (Haile Selassie, Derg and EPRDF regimes) and discussed how they were (are) took the policy in use. The sources of the following part of the literature are mostly news papers and magazines published at different point in time.

After the introduction of the monetary and fiscal policy in 1930's, like any other countries, different Ethiopian regimes have also used the policy so as to achieve economic growth in the nation.

Fiscal and Monetary Policy During Feudalism (Haile Selasie Regime):- During this time, the economy was seems like open for the international companies and some big manufacturing companies like Wonji Suger factory & Tendaho Cotton plantation were under the control of the British & Dutch companies were operating in the economy but the economy was a bit strict for the ordinary citizens of the nation and they had no right even to own land. In fact, land was under the control of the feudal government, land lords, and the Church and the rest of the population was mostly either tenant, or nomad.

The people of Ethiopia were familiar with tax during and even before this regime though the system was not that developed and there were no harmonized structure of taxation. The government officials whom were responsible to collect tax were collecting tax from both international capitalists and domestic tenants. In fact, the officers who were responsible to collect tax from the tenants were simply imposing taxes as their wish without considering any rule which harmonize the taxing system across the nation.

The Haile Selassie regime wasn't only collecting taxes but also spending some portion of the government revenue on the construction of infrastructures. The establishment of Ethiopian Air lines, National Bank of Ethiopia without the intervention of foreign stockholder, and Addis Ababa University could be taken as a simple example to show the government's spending in public institutions and infrastructures.

Ethiopia has introduced its own currency notes after the establishment of the National Bank of Ethiopia and the notes were issued with the value of 1, 5, 10, 50, 100, and 500 birr and the currency were circulating across the nation. Beside the circulation of domestic currency, the national bank of Ethiopia was also fixing the exchange rate of the domestic currency in terms of other currencies according to the Britton Woods agreement.

The establishment of the national Bank of Ethiopia became a starting point to set an official rate of interest on deposits and loans which is paid in terms of paper money. In fact, people had been using interest rates even before the introduction of banking system in the economy but mostly the mode of interest payment were salt, wheat, precious metals, land or any other thing which was used as a means of making transaction in the bartering system.

Therefore, by looking at the structure of the economy, we can conclude that the government (Haile Selassie regime) was implementing both of the macroeconomic policies in the economy. U.S. Library of Congress,http://countrystudies.us/ethiopia/,

Fiscal and Monetary Policy During The Derg Regime (1974-1991):- The regime was characterized by socialism and the nation was one of the socialist nations at the time being. When the regime came to power, the lands previously owned by the land lords, feudals, and the church became under the control of the socialist government. The rulers of the socialist Derg regime decided to reward the land for the tenants and tenants became the owner of the field they were farming for plenty of years, for the first time by this regime.

There was a high government manipulation of the economy and even the nation was following command economic system at the time being. As a result, most manufacturing industries, service sectors, and mechanized farming were under the full control of the government. The government had also power to decide over prices of goods and services and if someone ignored the government price level and set his/ her own price, he/ she would be punished for the crime he /she has committed. There was no place for the free market demand and supply interaction to take place.

The nation's banking system got high improvement and the central bank proceeded playing the crucial role in issuing the note, controlling the money supply, determining the exchange and interest rates, and controlling the overall financial market. The Pegged type of exchange rate which was 2.07birr/1USD and relatively high average

interest rate which used to be 4.4, 3.6, and 6.6 during the year 1970, 1980, and 1990 respectively were taken as the government monetary policies for almost 2 decades. (Geda, 2005)

The fixed exchange rate system and the high interest rate policy had their own adverse effects on the economy. For instance, High foreign exchange reserve was needed to let the system properly function in the pegged exchange rate regime and the realization of high interest rate let the people to save their money in the bank and wait for the interest rate rather than using it for the production purpose. At the mean time, since the interest rate was so high, people were not interested to take loan and invest in the nation therefore; government was highly engaged in the production of industrial outputs, construction of public goods, and performing mechanized farming, more than the private sectors.

During this regime tax was one means of the government revenue generating mechanism and it was collected by the tax authorities. The collected money was used for the construction of roads, hospitals, schools, and so on. The government were not only spending the money on the construction of public goods but also on the settlement of different kinds of factories like cement, sugar, Gun, textile industries and so on. Big infrastructures like hydro electric power generation, water and phone facilitations, and dam constructions were also taken place by the regime. To sum up, the regime has used both of the policies more seriously at a time.

Fiscal and Monetary Policy during EPRDF regime (current government of Ethiopia)

Today's monetary policy of Ethiopia consists:

Managed floating exchange rate system is used in today's Ethiopian economy in order to set the value of domestic currency in terms of another currency and the nation's currency can fluctuate within the interval of some specific amount for some specific

time period and the interval for the exchange rate would be changed accordingly when it is necessary to take that measure.

Unlike the Derg regime, EPRDF is using quite small amount of interest rate in the banking system so as to promote private investment. Selling and purchasing of financial assets such as bonds, treasury bills and the like are also taking place. By doing so, it is controlling the money supply which is circulating in the market.

The government is also intervening to the market through changing the money supply which circulates on the economy, which might be realized through making more notes and pumps it to the economy, or through issuing bonds, treasury bills and other financial assets.

The fiscal policy of EPRDF consists of;

Privatization: - The government could be characterized by selling the industries, and companies that were previously owned by the government to the privet sectors by aiming the improvement of the efficiency of production in the nation. So, the policy of privatization is something which is highly promoted by the current government.

Tax collection: - The tax collection mechanism got a high improvement following the down fall of the Derg regime and the nation uses progressive type of taxation system in the economy to tax people who get relatively more profit or more income higher than that of the poor people.

Spending money on the construction of infrastructures;- different infrastructures including the rail way construction, public apartments, highways, great Renaissance dams and the like are in the process of construction over and over.

Generally the government is playing with these two economic policies so as to solve the nation's financial and economic problems. (Zerihun,Kibret and Wakiaga, 2014)

3.3. THE STRUCTURE OF ETHIOPIAN IMPORT, EXPORT AND THE TRADE BALANCE

Ethiopia is located in the horn of Africa and like many other African countries; its economy was highly dependent on the production of agricultural outputs in the past. Agricultural sector had been consisted for more than 50 % of the total output share of the nation's Gross Domestic product though its share decreased to 40% now days. Not only the economy is highly dependent on the agriculture but also about 85% of the total population is estimated to be dependent on the sector as a means of income generation directly or indirectly. As a result, the nation was (is) using agriculture as a back bone for both of the domestic economy and international trade (export). (Asmamaw, 2008)

Ethiopia's export is highly dependent on the agricultural sector in general and on the production of coffee in particular. In addition to coffee the nation mainly exports hides and skins, pulses, chat, oilseeds, fruit and vegetables, gold and so on and all of these commodities together consists of 91% of the nation's export since 1980's to 1990's. (National bank of Ethiopia, 2010)

It's obvious that if the nation's export is highly dependent on the agricultural commodities, the nation's economy would be in trouble whenever there are some natural or economic inconveniences like shortage of rainfall, shocks on the international price of the products, or some other environmental changes.

The share of the industrial sector for export is not that significant. Less than 10% of the total export items was came from the industrial sector for the years before 2000 but this share has got improved to 11.7% and 11.3 % in 2000 and 2001 budget years respectively. The share become continuously increasing to 12.8%, 13.9% and 13.9%, in 2002, 2003, and 2004 respectively. (Lencho, 2010)

The nation has its own demand to import some commodities like, raw materials, semi-finished (processed) goods, fuel, beverage and tobaccos, chemicals (fertilizers and the like) capital goods (machinery and transport equipments), consumer goods (including food items) and the like. (National Bank of Ethiopia, 2010).

It is obviously known fact that, the products that Ethiopia is importing have inelastic type of demand so, even if there is a change in the price of the products, there might not be a significant change in the volume of import of the nation. Furthermore, since the number of the population is increasing very rapidly (it was 57.042 million in 1995 and became 86.613986 million in 2013), the importation of these products is getting to be taken place in bulk quantity.

As we have seen earlier, Ethiopia mainly exports agricultural outputs and imports some sophisticated industrial commodities and the total value of the imported goods always exceeds the price of exported ones therefore, most of the time the nation faces trade deficit in its international trade.

Table 1: The Value of Exports, Imports and the Trade Balance (in millions of Birr)

year	export	import	trade balance
1972	318.203	467.129	-148.926
1973	452.111	412.586	39.525
1974	590.915	489.081	101.834
1975	452.853	668.797	-215.944
1976	525.618	678.094	-152.476
1977	636.83	749.557	-112.727
1978	650.894	673.284	-22.39
1979	710.189	1192.672	-482.483
1980	948.525	1370.632	-422.107
1981	851.509	1432.858	-581.349
1982	778.083	1384.234	-606.151
1983	809.625	1641.661	-832.036

1984	929.625	1752.945	-823.32
1985	744.572	2065.005	-1320.433
1986	923.816	1770.433	-846.617
1987	795.284	2201.265	-1405.981
1988	773.642	2236.946	-1463.304
1989	902.753	2274.651	-1371.898
1990	736.806	2110.353	-1373.547
1991	616.384	1824.119	-1207.735
1992	318.356	2130.305	-1811.949
1993	948.983	1810.897	-861.914
1994	1419.468	3618.718	-2199.25
1995	2835.179	4739.967	-1904.788
1996	2607.288	6546.274	-3938.986
1997	3901.671	7708.246	-3806.575
1998	4141.582	8505.2	-4363.618
1999	3637.26	9338.459	-5701.199
2000	3957.802	11702.004	-7744.202
2001	3866.606	11438.661	-7572.055
2002	3864.32	12313.956	-8449.636
2003	4142.356	14485.289	-10342.933
2004	5176.644	16067.348	-10890.704
2005	7331.258	22295.69	-14964.432
2006	8685.376	39873.075	-31187.699
2007	10457.615	45126.438	-34668.823
2008	13643.332	63146.946	-49503.614
2009	15217.279	84977.193	-69759.914
2010	26115.306	108956.272	-82840.966
2011	44525.595	129693.362	-85167.767
2012	54494.767	191587.132	-137092.365

Source; - National Bank of Ethiopia

As we can see from the above Table, the nation's import is much greater than that of its exports except for the years 1973 and 1974. The type of the products that the nation

is importing and exporting would be the reason for the continuous trade deficit. On the other hand, unlike the previous years (1987, 1988, 1989, and 1990), the Ethiopian trade deficit faced a slight decrease in its amount in 1991, when the nation split in to two countries namely Ethiopia and Eritrea because of some political reasons. With the Exception of the year (1988-1991), the Ethiopian trade deficit get a continuous increase as time goes which indicates that, even if the total amount of export of the nation continuously increases, the rate of change in the level of the nation's import is higher than that of the exports and import is taking place in the nation in bulk quantity.

CHAPTER 4

EMPIRICAL MODEL

In order to prove whether the Marshall Lerner condition holds in Ethiopian economy or not, price elasticity of imports and exports should be estimated. In order to say that the Marshall Lerner Condition holds, the sum of price elasticity of imports and exports in absolute terms have to be greater than 1 ($|\boldsymbol{\varepsilon_X} + \boldsymbol{\varepsilon_M}| > 1$**).** Therefore**,** models in the equations (51) and (52) are used to check the validity of Marshal Lerner Condition for the Ethiopian economy. But before all, the nominal variables (import, export, domestic and world incomes) need to be changed in to real terms.

$$\text{Ln } X_t = \beta_1 + \beta_2 \text{ Ln WY} + \beta_3 \text{Ln RER} + \beta_4 \text{ DER} + \beta_5 \text{ DW} + e_1 \qquad (51)$$

$$\text{Ln } M_t = \alpha_1 + \alpha_2 \text{ Ln DY} + \alpha_3 \text{ Ln RER} + \alpha_4 \text{ DER} + \alpha_4 \text{ DW} + e_2 \qquad (52)$$

Where X stands for real Export, M stands for Real Imports, RER represents Real exchange rate, WY and DY represents real World and real Domestic income respectively, DER and DW stands for Eritrea (a country which was part of Ethiopia some 22 years ago) and war time dummy variables, and e_1 and e_2 are error terms. Additionally Ln stands for the natural logarithm of the data. If the absolute value of the sum of the parameters β_3 and α_3 are greater than one, we can say that the Marshal Lerner Condition holds in Ethiopian economy and the vice versa.

Some crucial variables like real domestic national income, real world income, real effective exchange rate, real import and export of the country has taken in to consideration and the domestic GDP is used for the nation's domestic income and all the necessary data to estimate equation (51) and (52) are collected from the concerned national and international institutions like the World Bank, National Bank of Ethiopia, and the like for the years from 1976-2013.

The World Bank is the source of data for Ethiopian consumer price index, the CIA "The World Factbook" and the World Bank data (World Development Indicators (WDI), December 2014) are used as a source of data for the world GDP. The domestic import, export and the nominal exchange rate data are collected from the National Bank of Ethiopia whereas the data of the domestic GDP is from the Ministry of Finance and Economic Development (MOFED).

The CPI of 15 member countries of EU in addition with China, Switzerland, Norway, Canada, and Australia has used in the calculation of the percentage of Average CPI of Ethiopian's bilateral trading countries so as to calculate the real exchange rate.

It's known fact that; one means of calculating the real effective exchange rate is multiplying the nominal exchange rate by foreign price and divide the result by domestic price. (Equation 53) For the sake of calculating the real effective exchange rate of Ethiopia, domestic consumer price index and foreign consumer price index are used for the domestic and foreign price variables respectively. Mathematically it is described as follows:-

$$R = EP^*/P \qquad (53)$$

Where R is real exchange rate, E is nominal exchange rate, P* is foreign price and P is domestic price. In order to estimate equation (51) and (52) Augmented Dickey-Fuller unit root test is needed to check if the variables in equation (51) and (52) are stationery or not. There are three different models of ADF test and they are stated as follows;

$X_t = X_{t-1} + ai + u_t$ (i), where there is neither constant or trend term

$X_t = \delta 1 + X_{t-1} + ai + u_t$ (ii), where there is only constant term

$X_t = \delta 1 + \delta 2t + X_{t-1} + ai + u_t$ (iii), where there are both constant and trend terms

The null hypothesis for each of the cases is similar.

H_0: has unit root or it is non stationery.

H_1: doesn't have unit root or it is stationery.

After applying the ADF test, if the absolute value of the t statistics becomes greater than the absolute value of the 1%, 5%, and 10% critical values, then we can reject the null hypothesis.

The third model of The ADF test which consist both trend and constant parameters is used to check if there is unit root and the result of each of the variables indicated that, the variables are not stationary at level but after their first difference taken in to the calculation they became stationary so that, it is possible to estimate the model.

Table 2: Augmented Dickey-Fuller test of LNX, LNWY, and LNREER

Null Hypothesis: LNX has a unit root

: LNWY has a unit root

: LNREER has a unit root

Exogenous: Constant, Linear trend

Lag Length: 0 (Automatic based on SIC, MAXLAG=9)

ADF result of ln X			
		t-Statistic	Prob.*
Augmented Dickey-Fuller Test statistic		-0.831657	0.7982
Test critical values:	1% level	-3.621023	
	5% level	-2.943427	
	10% level	-2.610263	

ADF result of ln WY

		t-Statistic	Prob.*
Augmented Dickey-Fuller Test statistic		-1.155471	0.6831
Test critical values:	1% level	-3.621023	
	5% level	-2.943427	
	10% level	-2.610263	

ADF result of ln REER

		t-Statistic	Prob.*
Augmented Dickey-Fuller Test statistic		-1.591482	0.7771
Test critical values:	1% level	-4.226815	
	5% level	-3.536601	
	10% level	-3.20032	

*MacKinnon (1996) one-sided p-values.

As we can see from Table 2 of the ADF results of Ln X, Ln WY and Ln REER, the absolute value of each of the t statistics is smaller than the absolute values of each of the critical value. Specifically in the case of Ln X, the t statistic is equals -0.831657 which is less than -2.943427, in addition, the p value of the variable is not significant since its value is greater than 5% therefore, it is possible to reject the null hypothesis which was claiming the variable was stationary at level. Similarly, in the case of Ln WY, the t statistics is less than the 5% critical value (-1.155471 < -2.943427) and the p value of the variable is not significant either. Likewise, the absolute value of the t statistics of Ln REER is smaller than the absolute value of the critical values, -1.591482 < -3.536601 and the p value of the variable is not also significant therefore, we can't reject the null hypothesis meaning that, the variables are non stationery at level.

Since the variables (Ln real export, LnWY and Ln REER) have
unit root, it's impossible to estimate the model directly and we need to fix the problem by taking the first difference of the variables and check it again if it's stationary. The original data need to be changed in to its first difference and ADF test need to be checked once again.

$$\Delta X_{t-j} = \delta 1 + \delta 2Xt\text{-}1 + ai + \sum_{t=1}^{k} \delta 3\Delta Xt - j + e_t \qquad (54)$$

Table 3: Augmented Dickey-Fuller test of D(LNX), D(LNWY) and D(LNREER)

Null Hypothesis: D(LNX) has a unit root

: D(LNWY) has a unit root

: D(LNREER) has a unit root

Exogenous: Constant, Linear trend

Lag Length: 0 (Automatic based on SIC, MAXLAG=9)

ADF test for D(ln X)

		t-Statistic	Prob.*
Augmented Dickey-Fuller Test statistic		-6.139223	0.0001
Test critical values:	1% level	-4.234972	
	5% level	-3.540328	
	10% level	-3.202445	

ADF test for D(lnWY)

		t-Statistic	Prob.*
Augmented Dickey-Fuller Test statistic		-4.623783	0.0037
Test critical values:	1% level	-4.234972	
	5% level	-3.540328	
	10% level	-3.202445	

ADF test for D(lnREER)

		t-Statistic	Prob.*
Augmented Dickey-Fuller Test statistic		-5.046213	0.0012
Test critical values:	1% level	-4.234972	
	5% level	-3.540328	
	10% level	-3.202445	

*MacKinnon (1996) one-sided p-values.

As we can see from the above ADF test results of Table 3, the t statistics are greater than that of the critical values and the p value of the variables are significant (which are less than 5%) and this enables us to reject the null hypothesis. The ADF test has applied for all DLNX, DLNWY and DLNREER and all the variables became stationary after their first differences taken in to account. To start with the first model;

$$\text{Ln } X_t = \beta_1 + \beta_2 \text{ Ln WY} + \beta_3 \text{Ln REER} + \beta_4 \text{ DER} + \beta_5 \text{ DW} + e_{1.} \qquad (51)$$

We expect β_2 and β_3 to be positive in other words a 1 % devaluation of the domestic currency (a percentage increase in REER) and a 1 % increase in the level of the world GDP (world income) are expected to have a positive impact on the volume of Ethiopian export.

Table 4: Estimation Results of the Export Equation

Dependent Variable: D(LNX)
Method: Least Squares

Sample (adjusted): 2 38
Included observations: 37 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LN_REAL_R)	0.631960	0.274203	2.304720	0.0276
D(LNWY)	3.457751	2.105279	1.642420	0.1100
DER	0.068393	0.161439	0.423646	0.6746
DW	-0.226250	0.153337	-1.475504	0.1496
R-squared	0.229238	Mean dependent var		0.038462
Adjusted R-squared	0.159169	S.D. dependent var		0.309568
S.E. of regression	0.283864	Akaike info criterion		0.421164
Sum squared resid	2.659103	Schwarz criterion		0.595318
Log likelihood	-3.791541	Durbin-Watson stat		2.842259

The result of the OLS estimates shows us in the above Table 4 that $\beta_2 = 3.457751$, and $\beta_3 = 0.631960$

Where β_2 and β_3 are the slop (the elasticity of the dependent variable with respect to the independent variables), which tells us that, when there is a 1 percent change in the value of the independent variables (real WY and REER), the dependent variable (X) is going to be affected by 3.457751 and 0.631960 respectively.

As we can see from the first regression model, the signs of the parameters (β_2 and β_3) are positive as they were expected previously therefore whenever there is devaluation in Ethiopian economy (increase in the value of REER), the nations export will increase to some extent. Likewise, keeping other variables constant, as the World income increases, Ethiopia's export will also increase by some specific amount. The model has auto correlation problem though, and the Durbin-Watson d stat statistics is equals 2.842259, which is greater than 2 therefore, the model has to be re estimated in order to solve the auto correlation problem.

In the export equation, the first difference of the variables has taken to run the regression then it is observed that there is auto correlation. Therefore, it is important to re estimate the model by incorporating AR (1) in the equation in order to solve the problem of auto correlation.

Table 5: Estimation Results of the Export Equation with AR (1)

Dependent Variable: D(LNX)

Method: Least Squares

Sample (adjusted): 3 38

Included observations: 36 after adjustments

Convergence achieved after 7 iterations

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LN_REAL_R)	0.894689	0.204959	4.365208	0.0001
D(LNWY)	4.249389	1.308921	3.246481	0.0028
DER	0.194379	0.105672	1.839456	0.0754
DW	-0.381741	0.103345	-3.693873	0.0008
AR(1)	-0.552839	0.152112	-3.634427	0.0010
R squared	0.434783	Mean dependent var		0.037954
Adjusted R-squared	0.361851	S.D. dependent var		0.313944
S.E. of regression	0.250792	Akaike info criterion		0.199857
Sum squared resid	1.949788	Schwarz criterion		0.419790
Log likelihood	1.402581	Durbin-Watson stat		2.043678
Inverted AR Roots	-.55			

As we can see from the Table 5 as AR (1) incorporated in to the model, the auto correlation problem become solved since the result of the Durban- Watson statistics approximately equals two. The t and p values of the variables become more significant after the incorporation of AR (1) in to the model which indicates the strength of the independent variables to explain the dependent variable. The R^2 result has also got an improvement after the introduction of AR (1) in to the model and the coefficient of the explanatory variables are also become more significant (0.894689 and 4.249389 for real exchange rate and world income respectively).

The first model is necessary but not sufficient to check if the Marshall Lerner condition holds therefore we need to test the second model as well.

$$\text{Ln } M_t = \alpha_1 + \alpha_2 \text{ Ln DY} + \alpha_3 \text{ Ln REER} + \alpha_4 \text{ DER} + \alpha_5 \text{ DW} + e_2 \qquad (52)$$

Where M stands for real Ethiopian import, DY stands for real domestic income, REER stands for real effective exchange rate, DER and DW stands for the dummy variables for Eritrea (which was part of Ethiopia 23 years ago) and war time cases respectively, Ln stands for the natural logarithm and e stands for the error term.

The null hypothesis for each of the cases is similar.

H0: M has unit root or it is non stationery.

H1: M doesn't have unit root or it is stationery.

Table 6: Augmented Dickey-Fuller test of LNM and LNDY

Null Hypothesis: LNM has a unit root

: LNDY has a unit root

Exogenous: Constant, Linear trend

Lag Length: 0 (Automatic based on SIC, MAXLAG=9)

ADF result of ln M

		t-Statistic	Prob.*
Augmented Dickey-Fuller Test statistic		-1.542714	0.7960
Test critical values:	1% level	-4.226815	
	5% level	-3.536601	
	10% level	-3.20032	

ADF result of ln DY

		t-Statistic	Prob.*
Augmented Dickey-Fuller Test statistic		-3.172085	0.1156
Test critical values:	1% level	-4.226815	
	5% level	-3.536601	
	10% level	-3.20032	

In the above Table above, (Table 6) we have seen that there are smaller t statistics compared to the critical values and the p value of the variables are not significant (which is greater than 5%) therefore, we can't reject the null hypothesis. Meaning that, M and DY (Ethiopian GDP) are not stationary at level. Therefore, the first difference of each of the variables need to be taken in to consideration and ADF test have to be done once again before estimating the model.

$$\Delta M_{t-j} = \delta 1 + \delta 2Mt\text{-}1 + ai + \sum_{t=1}^{k} \delta 3\Delta Mt - j + e_t \qquad (55)$$

Table 7: Augmented Dickey-Fuller test of D(LNM) and D(LNDY)

Null Hypothesis: D(LNM) has a unit root

: D(LNDY) has a unit root

Exogenous: Constant, Linear trend

Lag Length: 0 (Automatic based on SIC, MAXLAG=9)

		t-Statistic	Prob.*
Augmented Dickey-Fuller Test statistic		-5.617088	0.0003
Test critical values:	1% level	-4.234972	
	5% level	-3.540328	
	10% level	-3.202445	

ADF test for D(ln DY)

		t-Statistic	Prob.*
Augmented Dickey-Fuller Test statistic		-6.012401	0.0001
Test critical values:	1% level	-4.273277	
	5% level	-3.557759	
	10% level	-3.212361	

As we can see from Table 7, by taking the first difference of each of the variables such as real import and real domestic GDP, the problem of unit root got fixed and the data

became stationary. As it is shown in the above table of the first difference of real import and domestic income, the t statistics is more significant than the critical values and the p values of each of the variables is significant (which is less than 5%) therefore, we can reject the null hypothesis and accept the alternative hypothesis. Meaning, the data is stationary after their first difference taken in to account. As a result, it is possible to estimate the model and run the regression.

Since the first difference of the variables became stationary, it is possible to estimate the import model.

$$\text{Ln } M_t = \alpha_1 + \alpha_2 \text{ Ln DY} + \alpha_3 \text{ Ln RER} + \alpha_4 \text{ DER} + \alpha_5 \text{ DW} + e_2 \qquad (52)$$

We expect the slop of the domestic national income (DY) to be positive ($\alpha_2 > 0$) and the slop of real effective exchange rate (REER) to be negative ($\alpha_3 < 0$). In other words, a percentage improvement of the real domestic income is expected to increase the nation's real import by some specific percent. On the other hand, a percentage improvement of real effective exchange rate (devaluation) is expected to decrease the nation's import by some percentage.

Table 8: Estimation Results of the import Equation

Dependent Variable: D(LNM)

Method: Least Squares

Sample (adjusted): 3 38

Included observations: 36 after adjustments

Convergence achieved after 7 iterations

White Heteroskedasticity-Consistent Standard Errors & Covariance

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LN_REAL_R)	0.361068	0.239395	1.508251	0.1416
D(LNETHGDP)	0.207817	0.115058	1.806188	0.0806
DER	0.047581	0.107106	0.444241	0.66
DW	-0.024248	0.094023	-0.257899	0.7982
AR(1)	-0.020232	0.235521	-0.085903	0.9321
R squared	0.065166	Mean dependent var		0.077272
Adjusted R-squared	-0.055458	S.D. dependent var		0.20142
S.E. of regression	0.206929	Akaike info criterion		-0.184631
Sum squared resid	1.327414	Schwarz criterion		0.035302
Log likelihood	8.323362	Durbin-Watson stat		1.94931
Inverted AR Roots	-.02			

As we can see from the above regression (Table 8), the model has insignificant t and p values for the real exchange rate which indicates that Ethiopian import is not the function of real exchange rate and domestic income though the change in domestic national income (GDP) changes the amount of import to some extent. Surprisingly, the relation between the explanatory variables and the explained one seems to be positive and parameters ($\alpha_{2,}$ and $\alpha_{3)}$ have the value of-0.207817 and 0.361068 respectively. Though it was expected that change in the real import with respect to REER to be negative, what has observed is, devaluation actually doesn't lead the Ethiopian import demand to decrease and the sign of the parameter of import is not negative either. Unlike our expectation, a 1 % devaluation of the Ethiopian currency seems to lead the nation's import to increase by 0.361068 %. However, the coefficient of the real exchange rate variable is not statistically significant which means that exchange rate is not one of the determinants of import for Ethiopian economy. But we need to beer in mind that Ethiopia is a country which imports processed and semi processed outputs from abroad and whether devaluation adopted as a policy or not, the nation will keep importing very essential outputs as usual in fact, the nation's importing cost would be relatively high that's why devaluation and import seems positively related but the fact of the matter is the other way around meaning, devaluation and cost of import is directly related as devaluation applied in the economy, cost of importation of goods would also increase.

As (Bahmani-Oskooee and Mitezal, 2003), stated, the effect of devaluation is not always expansionary and it might be contractionary sometimes if we consider its impact from the supply side. As devaluation adopted in the LDCs economy, the total cost of import would be very high (increase) and this discourages the producers from producing commodities since they are mostly using highly sophisticated and processed (semi processed) commodities as an input for their production. Even though, we did not empirically test whether it might be also the case for Ethiopia taking the import dependency of the country into account, as devaluation applied in the economy, cost of importation increases and the nation’s production of industrial output level get negatively affected (become stagnant) and which leads the nation to be more and more

dependent on the production of the outside world. In some cases, instead of importing semi processed inputs (like car spare parts) , sophisticated production materials (machineries) and make further production and offer the final product to the domestic market, the nation's business men becomes the importer of fully processed commodities (automobiles and the like) for very rich minority groups. As a result, as devaluation adopted in the economy, the nation's cost of import increases.

The parameters tells us that whenever there is a percentage change in the value of the explanatory variables (Domestic income, and REER), the nation's import would be affected by 0.207817 and 0.361068 amount respectively in other words, 0.207817 and 0.361068 are the change in the value of Ethiopian import with respect to domestic national income and real effective exchange rate respectively.

By employing the above mentioned two models we got the sum of the absolute value of price elasticity of demand for Ethiopian imports and exports which equals 0.361068 and 0.894689 respectively and the absolute value of the sum of the two parameters $|\alpha_3 + \beta_3|$ is greater than 1. However, since the coefficient of import is not statistically significant, it is impossible to conclude as the Marshal Lerner Condition holds in Ethiopian economy

Since all of the variables are integrated of order one, cointegrating relation among the variables of export and import equations were also analyzed in order to investigate the long run relationship among the variables. We decided the appropriate lag firstly (Table 9) and then applied the Johansen Tests for Cointegration (Table 10)

Table 9: Lag selection criteria

Varsoc real X real WY REERrfpdp, maxlag(3)

Selection-order criteria

Sample: 1979 - 2013

Number of obs = 35

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	-940.884				5.30E+19	53.9362	53.9823	54.0696
1	-782.634	316.5	9	0	1.10E+16	45.4076	45.5917*	45.9409*
2	-777.506	10.254	9	0.33	1.30E+16	45.6289	45.9511	46.5621
3	-761.114	32.785 *	9	0	9.1e+15*	45.2065*	45.6667	46.5397

Endogenous: real X real WY REERrfpdp

Exogenous: _ cons

As we can see from Table 9, we have three stars at the 3rd lag variable indicating that the LR, FPE, and AIC lag selection criteria suggest us to use the 3rd lag while HQIC and SBIC criteria are suggest the 1st lag. Therefore, lag 3 has been chosen by three lag selection criteria for the model so it is appropriate to choose 3 lag over the 1 lag.

Table 10: Johansen Tests for Cointegration between Ln X, Ln WY, Ln REER

Vecrank real X real WY REERrfpdp, trend (constant) max

Trend: constant Number of obs = 36

Sample: 1978-2013 Lags = 2

					5%
maximum				trace	critical
rank	parms	LL	Eigen value	statistic	value
0	12	-806.5416	-	16.4653*	29.68
1	17	-801.6881	0.23635	6.7583	15.41
2	20	-798.3808	0.16784	0.1438	3.76
3	21	-798.3089	0.00399		
					5%
maximum				max	critical
rank	parms	LL	Eigen value	statistic	value
0	12	-806.5416	-	9.7071	20.97
1	17	-801.6881	0.23635	6.6145	14.07
2	20	-798.3808	0.16784	0.1438	3.76
3	21	-798.3089	0.00399		

The table above shows us the Johansen tests for co integration between the three variables. The null hypothesis of there is no co integration is tested against the alternative that there is cointegration. The guideline for the above test is, when the trace statistic value is greater than the 5% critical value, we reject the null hypothesis and as we can see, 16.4653is less than 29.68 and we cannot reject the 0 null hypotheses. Therefore, test results show that there is no long run cointegration between export, real exchange rate and the world income.

Similar analysis has also done for the variables of the import equation. We decided the appropriate lag firstly (Table 11) and then applied the Johansen Tests for Cointegration (Table 12).

Table 11: Lag Selection Criteria

Varsoc real M real DY REERrfpdp, maxlag(4)

Selection-order criteria

Sample: 1980 – 2013

Number of obs = 34

lag	LL	LR	Df	p	FPE	AIC	HQIC	SBIC
0	-874.34				5.20E+18	51.6081	51.6541	51.7428
1	-782.79	183.1	9	0	4.10E+16	46.7524	46.9361*	47.2911*
2	-776.78	12.019	9	0.212	4.90E+16	46.9283	47.2498	47.871
3	-763.92	25.726*	9	0.002	4.1e+16*	46.701*	47.1603	48.0478
4	-757.01	13.822	9	0.129	4.90E+16	46.8239	47.421	48.5748

Endogenous: real M real DY REERrfpdp
Exogenous: _ cons

As we can see from the Table above, we have three stars at the 3rd lag variable indicating that the LR, EFP, and AIC lag selection criteria suggest us to use the 3rd lag while only HQIC and SBIC criteria suggests the 1st lag. Therefore, lag 3 has been chosen by three lag selection criteria for the model so it is appropriate to choose 3 lag over the 1 lag because majority have to be granted.

Table 12: Johansen Tests for Cointegration between Ln M, Ln DY and Ln REER

Vecrank real M real DY REERrfpdp, trend (constant) max

Trend: constant Number of obs = 36

Sample: 1978-2013 Lags = 2

					5%
maximum				trace	critical
rank	parms	LL	Eigen value	statistic	value
0	12	-838.3332	-	26.4623*	29.68
1	17	-830.495	0.35303	10.7859	15.41
2	20	-825.578	0.23903	0.952	3.76
3	21	-825.102	0.0261		
					5%
maximum				max	critical
rank	Parms	LL	Eigen value	statistic	value
0	12	-838.3332	-	15.6764	20.97
1	17	-830.495	0.35303	9.8339	14.07
2	20	-825.578	0.23903	0.952	3.76
3	21	-825.102	0.0261		

The guideline for the above test is when the trace statistic value is greater than the 5% critical value, we reject the null hypothesis and as we can see, 26.4623 is less than 29.68 and we cannot reject the null hypothesis.

As a conclusion we can say that, there is no long run cointegration between the export and real exchange rate as well as the import and the reel exchange rate in the Ethiopian economy.

CHAPTER 5

CONCLUSION

In order to check the validity of Marshall-Lerner condition for Ethiopia, 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 import demand and devaluation as well as its export demand and devaluation, import and export demand equations are estimated. The results of the estimations show us that as devaluation applies in the economy, the nations export will be positively affected so that export will increase to some extent but unlike the theoretical expectations, instead of decreasing the nation's import demand, devaluation has a positive impact on Ethiopian imports. Additionally, since the coefficient of the real exchange rate variable is not statistically significant it can be said that exchange rate is not one of the determinant factors of import demand for Ethiopian economy. 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 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. Therefore, in order to fill the gap between the domestic demand and domestic supply of the economy, import is the only choice that the nation has even if it is very expensive and hard to afford.

The Johansen cointegration test empirically indicates as there is no long run cointegration between the variables of both the export and import equation such as (export, world income, and real exchange rate) and (import, domestic income and real exchange rate) respectively. Therefore, changing the nation's exchange rate in terms of another hard currency will not affect both the nation's imports and exports in the long run as a result, trade balance will not be affected in the long run whether devaluation applied in the economy or not.

Although the sum of the change in the value of Ethiopian import with respect to devaluation and the change in the value of Ethiopian export with respect to devaluation became greater than one $|\varepsilon_X + \varepsilon_M > 1|$, it is not possible to conclude that the Marshal Lerner condition does hold because, the empirical findings shows that the coefficient of import is not statistically significant.

This study shows that the 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 like sugar cane, sweet potato, (which can be used as an input for the production of sugar), oil seeds (which uses to produce different kind of food oils), modern mechanized farming on crops like wheat, maize, sorghum and the like.

Though the nation is 2nd in Africa and 10th in the world in the number of its cattle animals such as caw, ox, got, sheep, and so on, it is not known for its milk, cheese, and milk related products and so many things can be done on the sector. The nation is also rich in tropical fruits like Mango, Papaya, Avocado, Banana, and so on but surprisingly, it imports mango juice (Rani) from the Middle East countries but if the government give some kind of incentives for the domestic producers, it would be possible to establish juice making companies in the country and the sector would play a significant role in creating job opportunities, keeping the hard currencies from being outflow and increasing the nation's national income.

Even though it is important to motivate the production of agricultural outputs, primary products by themselves are not enough to solve the economic problem of millions of people who live under poverty line therefore, economic policies which promotes reinvestment and further employment creation need to be designed and applied in the economy. To make it clear, if the government announces some percentage of tax reduction for people (entrepreneurs) who reinvest their profit on the same or different sectors, the entrepreneurs would be motivated to reinvest their money and produce more outputs than before this would also enables to create more job opportunities for previously unemployed people. Let's say that this new policy has adopted in 2015, new companies which has established following the policy proclamation would be beneficiary from getting the tax reduction for their new company keeping the tax rate of their previous companies constant. This would definitely motivate entrepreneurs, corporations, sole proprietors, share companies and the like to reinvest their profit on the same or different sectors rather than spending it in some other unproductive ways.

Since the nation has already the large number of population and the number increases rapidly, the number of people who are looking for a job increases in large quantity and this problem has to be tackled by the creation of massive job opportunities, unless and otherwise it would be a serious problem both in the nation's economy and even other country's economy since someone who couldn't find a job in his /her country wouldn't sit there for nothing rather, would travel around the neighboring and other countries so as to get a job. Therefore, supply side policy measures like giving incentives for the producers and manufacturers need to be taken in to account so as to alleviate the nation's unemployment and economic problems and let the producers to reinvest in the economy.

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.

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I declare, I have carefully read Hacettepe University's Ethics Regulations and the Commission's Guidelines, and in order to proceed with my thesis according to these regulations I do not have to get permission from the Ethics Board for anything; in any infringement of the regulations I accept all legal responsibility and I declare that all the information I have provided is true.

I respectfully submit this for approval.

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ADVISER COMMENTS AND APPROVAL

There is no need to take an approval from Ethics Committe for the thesis

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